The RUBBER AGE

VOL. 27, NO. 7 JULY 10, 1930

LATE NEWS of the Industry

National Business Survey Conference Finds Rubber Industry Going Forward

THE National Business Survey Conference, through its chairman, Julius H. Barnes, issued on June 28 a summary of factual reports on important lines of business and industry without attempt at comment or interpretation. For rubber manufacturers, the conference report included 75 per cent estimates of May casing production and inventory.

Raised to a 100 per cent basis, these figures show that domestic output of all pneumatic casings in May totaled 6,080,000 units, or nearly 1 per cent more than the April production of 6,024,000 units and more than 17.1 per cent above the March output of 5,188,000 units. "Employment," the report states, "increased accordingly."

Inventories at the end of May, according to the survey figures, raised to represent 100 per cent of the industry, were 14,220,000 casings as against 13,948,000 at the close of April. "Thus," the report concludes, "the inventory situation was approximately as in May, 1928, when current production was approximately 10 per cent higher. Inventories this year are 20 per cent less than at the corresponding time last year, after a production in May, 1929, of 8,145,000 casings—the largest monthly production ever recorded by the industry.

"The industry reports business in June as about even with May, and approximately 30 per cent below June, 1929. For other branches of the rubber industry the report is that in June operations are on a somewhat higher level than earlier in the year, but below the level of this time last year."

Fisk Rubber Company Will Discontinue Making Auto Tires at Wisconsin Plant

PRODUCTION of all automobile tires will hereafter be concentrated by the Fisk Rubber Company at its factories in Chicopee Falls, Mass. The western unit at Cudahy, Wis., which was originally the Federal Rubber Company, will in the future manufacture only bicycle tires and sundries. The change, according to the company's announcement, is made with a view to reducing manufacturing overhead and costs.

The Fisk Rubber Company, organized in 1898 and maintaining the only tire factory of the "Big Five" still located in New England, the birthplace of America's rubber industry, acquired the Federal Rubber Company several years ago. Although the Wisconsin plant was modern in every respect, its capacity was limited and Fisk has long manufactured a considerable portion of the Federal tire line at its own Chicopee Falls factory. The production schedules and sales policies of Federal will be continued as formerly, but in the future all automobile tires under that brand name will be turned out at the Fisk Massachusetts plant. The sales offices of the Federal Rubber Company were shifted to Chicopee Falls at the time of the merger, and there is expected to be no change in the executive personnel.

Recently the Fisk Rubber Company announced its intention of disposing of its own retail establishments and concentrating all its distribution in the independent dealer. The Fisk Rubber Company has not shown operating profits since 1927, its losses amounting to $8,791,251 in 1928 and $7,496,457 in 1929. Improvement in the company's affairs seemed likely in early 1929 when Fisk common stock spurted from $9 to over $20 a share and the firm sold 851,306 shares of new stock at a price of $11 a share. Since then, however, it has fallen to new low levels and is now being quoted in the neighborhood of $2.50 a share. The company's 5½ per cent notes, maturing next year, are being sold on the New York Curb Exchange at about $37, while its 8 per cent sinking fund bonds, due in 1941, are traded in on the New York Stock Exchange at about $65.

Motor Parts and Accessory Business Showed Decline Through May and June

MANUFACTURING operations in the automotive parts-accessory industry declined in May and the seasonal curtailment has continued through June, in line with the recession in the car plants, according to the Motor and Equipment Association, which includes several rubber manufacturers in its membership.

In May, suppliers of original equipment and of service parts and service equipment for the trade lowered their schedules for the first time this year, though output of the accessory plants was a little higher than in April. Some further curtailment can be expected in the parts industry

since no immediate upturn in car production is expected. Business of member wholesalers of automotive products last month held even with April.

The grand index of shipments for all groups of manufacturer members reporting their figures to the Association in May stood at 144 per cent of the January, 1925, base index of 100 as compared with 163 in April, 155 in March and 245 in May a year ago.

Testing Materials Society Meeting Attended by Rubber Technologists

THE meetings of Committee D-11 on Rubber Products and of the various sub-committees held during the annual meeting of the American Society for Testing Materials at Atlantic City, N. J., on June 23 and 24 were of much interest and were well attended. Three papers on rubber belting and one on flexing tests were presented before the society at the rubber committee's session. The officers of the committee: W. B. Wiegand, Binney & Smith Co., New York City, chairman; C. R. Boggs, Simplex Wire & Cable Co., Boston, Mass., vice-chairman, and Arthur W. Carpenter, the B. F. Goodrich Co., Akron, Ohio, secretary, were re-elected for the ensuing term of two years.

The committee is sponsoring the submission to the American Standards Association for approval as American Tentative Standard of two specifications for rubber products. These are the standard specifications for rubber matting for use around electrical apparatus on circuits not exceeding 3,000 volts to ground and the standard specifications for friction tape for general use for electrical purposes.

The committee approved, subject to letter ballot, a new proposed tentative specification covering test methods and procedure for inspection of power transmission belting. It also approved, subject to letter ballot, revisions of the present tentative method of test for hardness of soft rubber (in slab form). Decision was reached to recommend withdrawal of the standard specifications for rubber pump valves and replacement of this standard with new specifications.

The Subcommittee on Flexing Tests for Rubber Products reported to the effect that the work outlined on the Scott flexing machine had been completed and the subcommittee found that while the machine is of great value in development work, sufficiently close correlation of results to warrant its use for consumers' acceptance tests has not been secured. The subcommittee was discharged at its own request. Committee D-11 decided to organize a new subcommittee to replace the one on flexing and to widen the scope of activity to include the various forms of dynamic fatigue testing with the exception of compression and impact.

In connection with the work of the Subcommittee on Mechanical Rubber Hose, decision was reached to give preference, for the present, to development of specifications covering methods of test rather than hose construction details for specific services. Formation of a section to prepare specifications on test methods for hose was authorized.

The Subcommittee on Physical Testing Methods and on Chemical Analysis reported on changes pending in the methods under their jurisdiction.

The Subcommittee on Insulated Wire and Cable reported on rather extensive revisions which are being considered in the Tentative Specifications for Insulated Wire and Cable: 30 per cent Hevea Rubber including those necessary to permit the use of organic accelerators and antioxidants as required by the advance of the art.

In the Subcommittee on Rubber Products for Absorbing Vibration, results of extensive tests on cold flow (compression set) were reported which show wide variations even when the tests were made under what were considered reasonably rigid specifications. Cooperation of equipment makers is now being sought to provide standard test equipment and a definite program for future work has been planned which should lead to a standard method for carrying out these tests.

The report of W. H. Whitcomb, chairman of Committee D-13 on Textile Materials, was featured by the presentation of revisions in standard specifications for tolerances and test methods for tire fabrics other than cord fabrics, and for cord fabrics. Revisions were also proposed in tentative specifications or chafer tire fabrics and methods of identification of textile fibers.

The report of H. S. Vassar, chairman of Committee D-9 on Electric Insulating Materials, which was read on the morning of June 25, was also of interest to rubber men. At the twelfth session on June 27, there was a special symposium on rosin, which included a paper by Dr. H. A. Winkelmann on "The Use of Rosin in Rubber Goods and Rubber Reclaiming."

Herron, Rodenbough & Meyer to Handle Gastex and Palmer Carbon Black Sales

ARRANGEMENTS have been completed by the General Atlas Carbon Company with Herron, Rodenbough & Meyer, whereby the latter has become the direct sales representative of the General Atlas Carbon Company for the sale of Gastex. This agreement, which became effective July 1, means that the sales of Gastex will be combined with sales of Palmer Black, since Herron, Rodenbough & Meyer are also the sales agents for the Palmer Gas Products Corporation.

In effecting this change, Fred C. Batchellor, who has been handling the sales of Gastex for the whole country, will be put in charge of the New England and Atlantic seaboard states for the sale of both Gastex and Palmer Black. Mr. Batchellor will retain the same headquarters at 60 Wall Street, New York City.

By combining forces on the sale of these carbon blacks, the General Atlas Carbon Company will have the technical and development assistance of Dr. H. A. Winkelmann and will be able to combine the research and experimental work which he has been doing with the work of its own laboratory. The General Atlas Carbon Company will maintain its identity as at present, with Herron, Rodenbough & Meyer operating sales offices at Akron, Chicago and New York City.

Both carbon black manufacturers are subsidiaries of public utility companies which rank among the largest corporations of the country. The General Atlas Carbon Company is a subsidiary of the Cities Service Company, while the Palmer Gas Products Corporation is controlled by the Electric Bond & Share Corporation through the intermediaries of the United Gas Corporation and the Electric Power & Light Corporation. J. W. Herron, senior partner of Herron, Rodenbough & Meyer, is a director of the Palmer Carbon Company and also vice-president and sales manager of the Palmer Gas Products Corporation, which was formed to conduct the carbon black business of the Electric Bond & Share Corporation and the Palmer Corporation of Louisiana.

LOOKING FOR A JOB? . . . There are a number of good positions open in rubber factories. Consult Classified Section, this issue, Page 381.

June Rubber Consumption Figured at Only 32,000 Tons by Exchange Members

CONSUMPTION of crude rubber by American manufacturers during June totaled approximately 32,000 long tons, it is estimated by members of the Rubber Exchange of New York, Inc., based upon operating schedules maintained through the month at Akron and other producing centers.

This would represent a decline of about 8,000 long tons from the May consumption total, and 11,500 tons from June last year when consumption reached the figure of 43,430 tons. Actual consumption in May, 1930, was 39,902 tons, as compared with the exchange members' estimate for that month of between 44,000 and 45,000 tons.

This sharp decline in rubber absorption is at variance with the recently issued report fo the National Business Survey Conference, which found the business of tire factories in June "about even with May" and other branches of the rubber industry enjoying June operations "on a somewhat higher level than earlier in the year." Rubber consumption may have been affected, however, by the fact that June, a thirty-day month, had five Sundays and by the closing down of the Goodyear factory and the Goodrich tire department for inventory purposes.

Should the estimates of the Rubber Exchange members prove correct, domestic consumption for the first six months of 1930 would have been approximately 214,000 tons, as compared with 267,857 tons in the first half of 1929 and with 198,618 tons in the last six months of that year.

Mohawk Rubber Omits Preferred Dividend As Executive Personnel Is Reorganized

FOLLOWING a directors' meeting at Akron on June 30, it was revealed that the Mohawk Rubber Company would take no action on the dividends due on its outstanding preferred stock at this time. There are approximately 21,642 shares of the company's 7 per cent preferred stock outstanding at present, and the payment of the regular quarterly dividend would mean a distribution of about $37,875.

Five changes in the officers and directors of the company were also announced after the special session of the board at the tire factory. J. F. Jones, vice-president in charge of sales and a director, who has been with Mohawk since 1923, has resigned, and George W. Spahr, formerly sales manager of the Dayton Rubber Manufacturing Company, has been named to the office. The place of Mr. Jones on the board of directors has been filled by the election of Dr. Robert H. Bishop, Jr., Cleveland physician, who was until last April on the board of the Goodyear Tire & Rubber Company.

The resignation of H. H. McCloskey, secretary, was accepted by the directors, and the offices of secretary and treasurer were combined, with Ray E. Bloch, vice-president in charge of finance, holding both positions. Leon T. Noel, of Chicago, was elected assistant secretary, a new position, and H. H. Matz was renamed as assistant treasurer. The board of directors of the Mohawk company now consists of S. S. Miller, chairman, Charles Borland, president of the company, Dr. Bishop, W. L. Flory and J. B. Huber.

Mr. Jones came to Mohawk seven years ago at the solicitation of the company. Between 1918 and 1920 he had been district sales manager for New England for the Portage Rubber Company, Barberton, Ohio, and before that had held a similar position with the Gates Rubber Company, Denver, Colo. In addition to his work in the tire industry, his business experience since 1895 has included positions with Montgomery Ward & Company, Armour & Company, the Barsmith Ice Machine Company, the Canister Company and the Republic Can & Metal Company.

At a stockholders' meeting which preceded the directors' session, it was voted to increase the authorized capital stock of the company from 125,000 to 150,000 shares. Of the increased stock that will be made available, 15,000 shares are to be held in reserve for subscription by employees of the plant, while the balance is expected to be sold to the new officers and directors.

J. F. JONES

Last year the Mohawk Rubber Company earned $216,327, or 56 cents a share on the common stock, as against $687,910 in 1928, equal to $4.73 a share on the common. Early in November, the directors decided to discontinue the payment of dividends on the common stock which had been inaugurated in the spring of 1929 on a quarterly basis of one per cent in stock and 75 cents in cash.

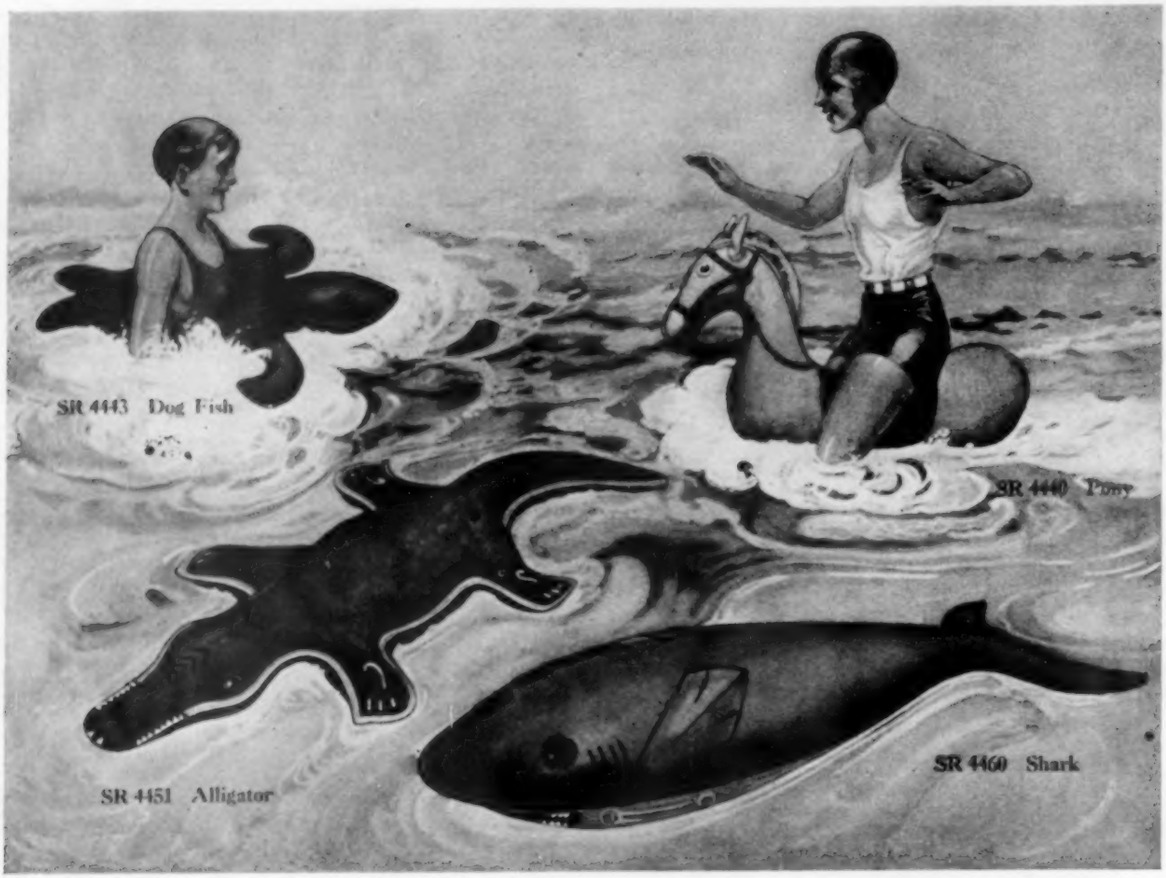
After a refinancing plan was put into effect and a loan negotiated for $800,000 in March, 1928, the company's old common stock had a spectacular rise from 35 to a peak of 246, after which a stock dividend of 300 per cent was declared, splitting the value of the shares on a four-for-one basis. The new common stock sold as high as 66 early in 1929, but since then has steadily declined and has sold as low as 8 recently, or below its 1928 low, with adjustment for the split-up. The preferred stock has dropped from 90½ to a low of 15.

Rubber Futures at Cheapest Levels As Company Stocks Break 1929 Lows

WHEN crude rubber for July delivery sold on the Rubber Exchange of New York at 11.60 cents a pound on June 23, a new low mark was established for that market. On the New York outside market, the commodity sold for several days at a low of 11⅞ cents a pound, while in London it was quoted as low as 5⅞ pence. The average closing price at New York for spot rubber during June was 12.45 cents a pound.

Meanwhile, several of the leading rubber companies' securities have been selling on the New York Stock Exchange and other exchanges below their 1929 low levels. Goodyear common, which had a low of 60 in last October's break, dropped to 54⅞ on June 27. Goodrich common, which was never below 38¼ last year, slumped to 22½ on June 18 and has not rallied much above that figure since. Firestone common, whose 1929 low was 24½, touched 19¾ on July 7, while Fisk sold down to within a half-point of its bottom of last year.

(Other news of the industry will be found on Pages 375-381)



Rubber Toys *for* Beach *and* Aquatic Sports

Growing Demand for These New Playthings—Manufactured in Many Shapes and Sizes for Both Kiddies and Grown-ups—Industry Barely Ten Years Old

PLAYTHINGS for surf bathing and water sports made of rubber or of rubberized fabrics are only a recent development. Today the business has grown to one of surprising proportions and in the diversity of kinds and types of water toys it rivals almost any sporting goods field. Water toys are now found at every watering place, be it in surf bathing on the coasts or in the fresh water lake resorts. They have taken on forms and shapes ranging from the ordinary type of water-wings to grotesque imitations of sea-serpents, and whales. So popular have they become that they are no longer regarded as the rich man's playthings but their costs have come down to within reach of the pocketbook of most anyone.

Less than ten years ago, aside from water-wings, water toys were practically unknown. The Seamless Rubber Company, of New Haven, Conn., appear to have been the pioneers in the industry but up to five years ago they were making them only on special order and exclusively for one lone distributor, who had luckily hit upon the idea and visualized the potential demands. At the present time approximately ten manufacturers are engaged in the business and the trade is becoming highly competitive. Sporting goods stores and all merchants catering to summer vacationists have found these new products a profitable addition to their stocks. Only recently one of the largest New York

Lobster Beach Float *(Tyer Rubber Company)*

Seal Float *(Tyer Rubber Company)*

department stores contracted for the entire output of one of the principal manufacturers.

The variety of shapes include walruses, horses, crabs, toads, ducks, putties, dogfish, seals, alligators, sharks, camels, turtles and dragon-flies, not to mention the other, more or less, standard types of beach toys, such as floats, water raft mattresses, ring floats, rubber surf boards, water-wings and the like.

Most of the toys are made of the best quality of steam cured rubber stock. The accompanying illustrations show the great variety in types.

Made in Variety of Colors and Shapes

In the matter of color and decoration these water toys are being made in many attractive fast hues with brilliant red, green and yellow shades predominating.

Sizes depend largely on the type of toy and vary from an 18-inch Toad to a 72-inch Turtle. The larger sized toys are the more stable in the water.

The ducks, ponies, horses and camels are equipped with sand bags to be used as keels to keep them upright in the water when they are not being ridden. In some of the toys this ballasting is done by employing sand pockets in the bottom but the latest types are equipped with grommets on the under side to which canvas sacks, filled with sand or heavy weights can be attached with tapes.

Besides the Seamless Rubber Company, which has a wide assortment of water toys in their line, the Rex Rubber and Novelty Company, of New York City, and the Tyer Rubber Company, of Andover, Mass., are also featuring these products in their latest catalogs. The latter company has recently introduced a "lobster" beach float, in a bright red color. A large size is offered in a length of 51 inches and a width of 14½ inches, weighing 2½ pounds. A smaller size is 42 inches long and 13 inches wide, weighing 1 1/3 pounds.

Speed Play Buoy
(Fox Toy Company)

The Fox Toy Company, of Berea, Ohio, is marketing what they call the "Speed Play Buoy," for babies to play in safety. Comprising a canoe-shaped frame, mounted on a specially designed and strengthened tire inner tube, it resembles an aquatic kiddie-car. The seat is suspended from the frame by adjustable straps forming a cockpit, thus allowing the child free action of the arms and legs to paddle. The company also makes other sizes for adults.

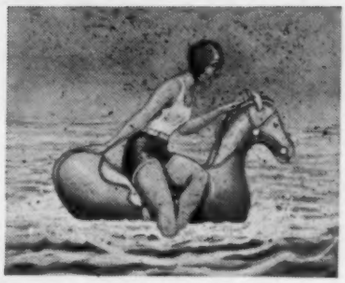
Water Mattresses and Rafts

In the line of air rafts and water mattresses, the Converse Rubber Company, of Malden, Mass., has entered the field with a new surf-riding raft. The ribs run lengthwise and the self-cover of tan jeans is vulcanized to a heavy rubber coating on both sides. In size it is 25 inches wide and 75 inches long. The New York Rubber Corporation, of Beacon, N. Y., has also developed recently a wide line of these rafts. Their "Airubber Kidboat" for children has separate air chambers to provide double protection and will support a dozen youngsters. It is 5 feet long with a 30-inch beam but weighs only 10 pounds. Its carrying capacity is 150 pounds.

"Airubber" Beach Mattress
(New York Rubber Corp.)

"Airubber" Boat
(New York Rubber Corp.)

Below: Beach Toad
(Seamless Rubber Company)



Above: Water Camel
(Seamless Rubber Company)

The market for these aquatic toys is an ever growing one and the possibilities have only been touched upon.

Both the kiddies and the grown-ups are cutting up more and more aquatic monkeyshines with these new playthings. In fact, there is a more spirited demand from the grown-ups than from the children. The market is no longer confined to the beaches and lakes. They are to be found in increasing number in private and public swimming pools and wherever water affords an opportunity for frolicking. The species of animal or sea life which have been so far imitated in these playthings are still but few and it can be well expected that before long the lion, the rhinoceros, or even the octopus and swordfish will find their prototypes in rubber water toys.

BARAK

A NEW accelerator activator, under the trade name Barak, has been recently introduced to the rubber manufacturing industry by E. I. du Pont de Nemours and Company.

Barak is a new type of accelerator activator whose most distinctive property is that it prolongs the range of cure of compounds and tends to prevent reversion on overcures. When used in the absence of other accelerators it has an extremely mild accelerating effect but when used in conjunction with other accelerators, particularly those of the acidic type such as Thionex and Captax, it activates them to such a degree that distinctly less accelerator is required.

Barak is a translucent light brown liquid which has no effect on the color of compounds in which it is used. It is claimed to assist in the dispersion of carbon black and other finely divided pigments. It is claimed that it is usually unnecessary to use stearic acid or other fatty acids in compounds containing Barak.

SMELL as a Hindrance to Selling Household Rubber Goods

There Are Only Two Smells More Disliked than Rubber—Aromatics Being Used to Decrease Sales Resistance

By DONALD A. LAIRD

Colgate University, Hamilton, N. Y.

WHY do rubber shower curtains not dominate the shower curtain market? Why do other numerous rubber products for household use fail to take on across the counter as their usefulness to the householder would suggest that they would?

That it is the smell of the rubber is indicated by a consumer survey made by F. Aumueller of the Cramer-Krasselt Advertising Agency of Milwaukee. The reaction of typical consumers to the smell of some 56 varieties of well recognized common smells was investigated by Mr. Aumueller.

That only two common smells on his list were more disliked than the smell of rubber goods was one of his discoveries of paramount importance to the industry. The two smells which were more unpopular were perspiration, the most disliked, and garlic the second most repulsive,—not such interesting companions for rubber.

In exact figures 100% of the women disliked the smell of perspiration, 93% the smell of garlic, and 82% disliked the smell of rubber. Women are more particular than men about smells, according to his figures, which makes the problems of household rubber goods more distressing since they are largely purchased by women. The percentage of men who had marked dislikes to these unpopular odors were as follows: perspiration, 95%; garlic, 90%; rubber, 81%.

Other smells which are usually regarded as of enough unpleasantness to increase sales resistance did not come out so near the bottom in this agency survey. Fish, olive oil, turpentine, tar, and sauerkraut were all less unpleasant on the average than the rubber smell.

Why household rubber goods do not find the wide market they merit is clearly shown by this survey. Does this imply that the industry should give up the idea of cultivating this market? Emphatically no — but it does mean that more attention might be given to the matter of the smell of the product. Textile manufacturers are already doing this on a wide scale, in spite of the fact that the smell of cloth is not no permeating or so unpleasant as the smell of rubber.

Here is what has been done for a distinctly unpleasant odor, one which ranks fourth worst on Mr. Aumueller's list — kerosene. Fly-sprays are principally kerosene to which is added an extract of pyrethrum. The resulting odor builds sales resistance more rapidly than a stuttering bond salesman. So they tried killing the odor with orthodox perfumes. Some perfumes worked, others did not work even when used in relatively large amounts. They then turned to the field of industrial aromatics, a new development of perfume chemistry which is having a remarkable development. Let Dr. Eric C. Kunz, of Montclair, N. J., who is the outstanding expert in this new field, tell the story in his own words:

"Killing an offensive odor can be done by simply covering it with a more pleasant odor, but in that case you do not really neutralize the bad odor because you have merely covered it with a stronger, although more pleasant, odor. What we are now doing is to make the offensive odor a part of the good odor, in other words, putting the bad odor to work rather than trying to remove it by expensive washings, or by impregnating the goods with a stronger odor to mask the unpleasantness.

"Take the case of artificial leather which normally has a very strong linseed oil odor," he continues. "We have tested some thirty different industrial aromatics which were incorporated into the raw materials used in making the artificial leather. Four of these blended with the linseed oil odor so as to make the distasteful odor pleasant when the aromatics were only 1/10 of 1% of the weight of the finished piece. The others, which did not blend, had to be used in large amounts, or until they were intense enough to smell stronger than the oil itself.

"These four, however, blended with the oil smell to produce a good smell, just as the foulest imaginable smells are basic in producing a jasmine perfume. This is the general principle now being followed: Don't try to kill the smell, put it to work."

Dr. Kunz, working independently of Mr. Aumueller, thus states the solution the chemist has discovered to the cause of sales resistance to small rubber goods which the advertising agency research man discovered.

Rubber shower curtains are now being made with industrial aromatics blended so that the disliked rubber smell has vanished into a good smell which the consumer likes. Other rubber products are following. Permission has been withheld to mention the firm names which are going ahead along these lines, but the general proposition is of tremendous significance to the rubber industry.

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Toxic Substances *in the* Rubber Industry

PART XII

By P. A. DAVIS, A.B., M.A., M.D.

Assistant Medical Director, Goodyear Tire & Rubber Company

Antimony and Its Compounds

ANTIMONY is a silver white lustrous metal and crystalizes in laminated formation, showing lines of fracture. It belongs to sub-group B of group V of the elements and is associated with As, Bi and phosphorous. It occurs chiefly in nature as the sulphide Sb_2S_3 from which the metal is obtained by smelting. The commercial antimony often contains traces of silver, gold, arsenic, iron, lead, copper, bismuth and sulphur. It readily forms alloys with arsenic, lead, tin, copper, zinc, iron and bismuth.

Antimony is an amphoteric element and forms compounds where it is in some instances the positive ion and in others the negative ion. The following compounds illustrate this:

Positive Ion	*Negative Ion*	*Antimoniates*
SbH_3	H_3SbO_3	KSBO
Sb_2S_3	$H_4Sb_2O_5$	$K_4Sb_2O_7$
Sb_4O_6	$H_4Sb_2O_7$	$K_2H_2Sb_2O_7$
Sb_2O_4	$HbSO_3$	$Pb(SbO_3)_2$
Sb_2O_5		

Halogen Compounds		*Sulphides*
S_6F_3	$Sb\ Br_3$	Sb_2S_3
$Sb\ Cl_3$	$Sb\ I_3$	Sb_2S_4
$Sb\ Cl_5$		
$Sb\ Cl_4$		

Sb_2F_3 enters into combination to produce double salts, viz:— $(NH_4)_2SO_4SbF_3$ which is an important mordant, also $8SbF_32NH_4F$ which is used in the dyeing industry.

Sb_2O_3, Sb_2S_3 and Sb are the principal compounds used in the glass coloring industry.

Uses of Antimony

1. Dyeing industry
2. Printing industry
3. Rubber industry
4. Making various pewters
5. Making anti-friction metals
6. Making non-rusting nails
7. Electro plating and storage battery industry
8. Used in arts for painting and plating, and manufacturing fireworks
9. Used in medicine.

Antimony was originally used in medicine as an emetic in the form of a pill and by placing wine in antimony goblets and letting it stand over night. Sufficient antimony was dissolved by morning to produce an emesis when taken. The present use of antimony in medicine is principally confined to the potassium, antimony tartrate or tartar emetic and the sulphide.

In industry commercial antimony and its compounds are used and there is usually lead and arsenic present, so one has to be on the lookout for effects caused by these elements. The principle compounds of antimony used in the rubber industry are the golden and crimson sulphides. It may be present as an impurity in many other compounds, and especially associated with lead and arsenic.

Avenues of Absorbtion

1. Alimentary system
2. Respiratory system
3. Skin

The respiratory system is the chief avenue of entrance as most of the compounds are in powder form or become finely divided in their course of use. At high temperatures the metal can be sublimed and the presence of nascent hydrogen may form stibine which like arsine, is extremely poisonous when inhaled. The inhalation of powdered antimony or its compounds into the lungs often produces a bronchial irritation with mucoid formation and the subsequent deposition in the lung tissue and this may be the beginning of a chronic poisoning.

The intake through the alimentary system is by swallowing dust while at work, contamination of food, tobacco and water. Some liquors that have been in pewter containers may contain a small amount of antimony, especially sour wines.

Typesetters, linotype workers, may take some antimony in from handling type metal or from the fumes of the molten metal. Professor A. J. Carlson of the physiological department of the University of Chicago has made some interesting experiments with the golden and crimson sulphides of antimony and the gastric juice of humans. He reports that about 3% of the golden and about 8% of the crimson sulphides are soluble in the human gastric juices. This may be even more in cases of acidosis or hyperacidity.

Absorption by the skin is not marked except by those using alloys, grinding certain bearings or working with pewter, and where there is an oil or a greasy substance used in conjunction with these operations.

In storage battery manufacture much attention should be given to antimony if the grid material is one in which it is present.

Lead enters into this work as a complication and much difficulty is encountered for the symptoms of antimony poisoning is very much the same as those of lead poisoning. If one has this difficulty it can be eliminated by very careful analysis of the symptoms and a micro-chemical examination of the urine, stools, blood serum, and salivary excretions. The blood picture, unlike lead, shows an eosinophilia instead of basophilia, but this is not always constant.

All the soluble salts of antimony are toxic when taken by mouth, the degree of toxicity becoming manifest only by the amount that is taken, for example ½ to 1 grain of tartar emetic may produce emesis. If the compound is not water soluble and only partially soluble in .4% HCl solution it may be taken in 3 to 6 grains or even larger doses without any detrimental effects. I am of the opinion that it is due to the latter fact that there is not a great number of poison cases in the industry. Antimony is a peculiar element in its reactions with other compounds and a substance which has an amphoteric property usually has some compounds that are more toxic than some others, and some amphoteric elements are more toxic than some others.

Absorbed antimony compounds do affect the whole system, but has a predilection for gasto-intestinal system.

The following systems seem to be affected:

1. Gastro-intestinal system
2. G U system
3. Nervous system
4. Blood system
5. Respiratory system
6. Skin

The soluble salts, or those soluble in .4% HCl are intense irritants to the mucosa of the stomach and intestines. They produce

nausea and emesis and in large doses severe purgation often producing gastric and intestinal hemorrhages.

Vomiting is due to a reflex on the vomiting center and also a direct action on the gastric mucosa.

Salts and compounds of antimony in large or repeated doses over a period of time produce an irritative nephritis, with a severe albuminuria and a cystitis.

Ringer and Murrell in their experiments state that antimony is a poison to the nerves and muscles. Its action is a depressant one on the sensory trunks and often paralyzes the centers in the spinal trunk. This depressant action affects the heart muscle as well as the nerves that control the vasomotor system and as a result toxicosis caused by the antimony produces a low pulse rate and a low blood pressure. Cardiac stimulants are not very responsive. The cardiac muscle seems to be saturated with antimony salts and does not respond. The same is true with the nerve control of the respiratory system. The rate of respiration is decreased, pulmonary circulation is sluggish, pulmonary edema results, the bronchial tubes fill up and respiratory failure produces death. Sometimes pneumonia develops due to lowered pulmonary resistance.

A toxic anemia develops in the cases where there has been a constant exposure and absorption. There develops a marked eosinophilia in most cases, opsonic index is decreased and agglutins are diminished.

The skin is very readily affected by the soluble salts and less readily by the insoluble ones. Acid perspiration increases the irritability and this is because the solubility is increased.

An intense itching develops with subsequent acne-like pustules erupting. This may continue to the ulcerative stage with sloughing. Chronic induration with non-healing wounds with much scaling around the edges may persist for months.

There may be formed on the mucus membranes of the mouth and nose some small ulcerative areas resembling luetic ulcers or Vincents Angina.

The largest percentage of elimination is by way of the intestinal tract. The mucosa of the intestines produce a protective irritation and this produces intense peristalsis which result in purgation.

When concentration becomes excessive the kidneys react and produce an albuminuria and a renal edema which may become serious.

Elimination from the skin is by perspiration. If this has an acid reaction and much antimony is present a dermatitis often develops in the body folds.

Symptoms

1. Indigestion, nausea, vomiting, diarrhea in acute cases, constipation in slow developing or chronic cases
2. Loss of weight and loss of appetite
3. Development of dermatitis
4. Toxic anemia with eosinophilia
5. Low blood pressure and slow pulse
6. Depressed feeling and reaction time slow
7. Catchy respirations, mucous bronchitis
8. Pain in abdomen, painful stools and very frequently there is some blood in stools
9. Muscle weakness

These are general symptoms but can be divided as to acute and chronic:

Acute Poisoning

1. Violent irritation of mouth and nose
2. Violent irritation of stomach and intestines
3. Vomiting
4. Purging with bloody stools
5. Slow pulse and low blood pressure
6. Slow shallow respirations
7. Toxemia, coma, convulsions
8. Death from cardiac and respiratory exhaustion

Chronic Poisoning

1. Dryness of throat
2. Pain on swallowing
3. Occasionally vomiting and persistent nausea
4. Fainting easily
5. Diarrhea
6. Albuminuria
7. Loss of appetite and loss of weight
8. Giddiness
9. Dermatitis (Pustular or ulcerative)
10. Toxic anemia
11. These cases may become acute and death is caused by exhaustion

Prevention and Treatment

Prevention is the best treatment. All compounds if used in a powerful form should be handled carefully in order to keep down the dust. The hands and arms should be protected and if considerable exposure is present the individual should wear a respirator. Where such compounds as the oxides and sulphides are used in large quantities, the individual should work only 2 or 3 days or a week on this job and then be relieved. This prevents accumulation and helps elimination.

If soluble compounds are used, the exposed surfaces of the body should be well protected by rubber gloves, waterproof clothing or by the use of a protective ointment which can be applied before going to work and washed off at the end of the day.

Lunches should be protected from the dust.

Individuals should not eat until after the hands have been thoroughly washed.

Overalls or some other suitable protection should be furnished and laundered often.

Examinations should be made often and if any slight symptoms are present the individual should be removed from contact with antimony and instructed as to his physical care. If any cases show poisoning the treatment is as follows:

Acute Poisoning

1. To bed in dorsal position and with head in shock position
2. Large doses of tannic acid or copious amounts of tea
3. Gastric lavage
4. Enemas and flushings
5. Intravenous, glucose solution
6. Morphine for pain
7. Alpha-Lobelin for respiratory failure
8. Strychnine and digitalis for heart
9. External heat for subnormal temperature
10. Rectal feeding

In chronic poisoning the symptoms may be very mild and those of indigestion, nausea and tired feeling is all that is complained of. The treatment of these is as follows:

1. Removal from contact with any antimony compounds
2. Elimination by alkaline cathartics and diuretics
3. Milk and tea diet, vegetables
4. Digitalis (infusion) early to protect the heart
5. Tonics containing iron, strychnine, calcium and vegetable infusions
6. Alkaline the system by using lime salts

The skin condition is best treated by washing thoroughly with lime water then applying glycerine tannate for several days, followed by zinc oxide ointment and by exposure to sunlight or to violet rays.

Continuous Hose Making Machine

A NEW and entirely different type machine for making continuously all kinds of wrapped garden hose, water and pneumatic hose and small diameter C. I. tubing has just been announced by the Spadone Machine Co., 15 Park Row, New York. The machine has been thoroughly tested in actual operation and produces a quality of hose superior in hydrostatic and friction test than hose made by the older method.

It will make hose in 500-foot continuous lengths, or as long as practical, at a minimum rate of 40 feet a minute, without a mandrel, suitable for lead press cure. It is fast, economical to operate, and produces a quality hose at an extremely low cost.

American Tires in India

REPORTS are current that the boycott against British made goods which is prevailing throughout India, as a part of the non-obedience campaign, is having the effect of increasing the market for American and other non-British tires and other rubber goods. Orders for American tires for shipments to Indian distributors, are reported to have shown an appreciable increase within the last few months.

Laboratory Flexing Tests as An Aid in Investigating the Pneumatic Tire Carcass

By H. A. Depew and H. C. Jones

The New Jersey Zinc Company, Palmerton, Pa.

TIRE tests, both service and test wheel methods, are generally used for carcass development, supplemented to a limited extent by laboratory tests, which include stress-strain tests on the compound and the cord, friction tests to measure the force necessary to pull the rubber compound from the cord, and pulley flexing tests. Owing to the cost and difficulty of reproduction of tire tests, it is desirable to use laboratory tests in so far as possible, although it will be impractical to eliminate tire tests as final checks before putting laboratory information into production and as a general method of attack for special problems in design. Among the important problems that lend themselves especially well to laboratory methods are: (1) Insulation of tire cord, including thickness of skim and spacing of the cord; and (2) rubber compounds (both before and after aging), including composition and state of cure.

In choosing laboratory methods, it was decided to use flexing methods, with tension tests on the compound as an aid in judging state of cure. Friction tests were not made since they would be meaningless for indicating the bond between rubber and cotton when the cords are well separated in rubber.

The test pieces chosen were six-ply cord belts 9 in. long and 1 in. wide, with three layers of cord running lengthwise and three alternate layers crosswise. These belts were assembled and vulcanized according to the methods described by Gibbons.[1] Belts are not tested until after five days' storage since the flexing life is relatively short immediately after vulcanization and it increases for from one to five days before becoming constant, depending on the compound.

A ply thickness of 0.050 in. in a six-ply belt 9 in. long and 1 in. wide corresponds to a volume of rubber compound of 2.01 cu. in. when 17 cords per inch are used, and to a volume of rubber compound of 1.68 cu. in. when 25 cords per inch are used. The additional volume of rubber for thicker plies can be calculated directly from the area and the additional thickness.

Fig. 2.—Pulley Flexing Machine

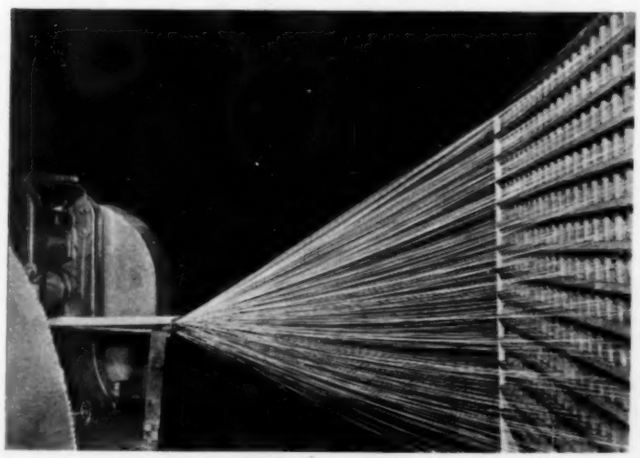


Fig. 1.—Rubber Impregnated Cord Feeding from Small Bobbins Through Combs to the Calender Where They Become Imbedded in a Sheet of Rubber

The details of coating the cord with a rubber compound are briefly described with the belief that they will be helpful. The tire cord, received on large bobbins, is dried and passed through a rubber cement, consisting of the compound dissolved in benzene. After drying, the cord is rewound on small bobbins and fed through two combs to a three-roll calender and skimmed on one side (Fig. 1). The compound used in skimming is the same as that used in making the cement. The rubber sheet with the cords firmly in place is again passed through the calender and skimmed on the other side to the desired gage. When the stock cools, it is cut into squares, piled up, and cured according to the method of Gibbons.[1]

Methods of Flexing

The belts are tested on three types of flexing machines: (1) pulley test (constrained bending); (2) free bend test; and (3) jerking test. The pulley test is well-known and the other two are experimental tests.

Pulley Test:

The United States Rubber Co. flexing machine built for the

Note: This paper was presented at the Thirty-third Annual Meeting of The American Society for Testing Materials, held at Atlantic City, N. J., June 23-27, 1930, and is reprinted herein with the permission of the Society.

[1] *Industrial and Engineering Chemistry* (Analytical Edition), Vol. 2, No. 1, p. 99 (1930).

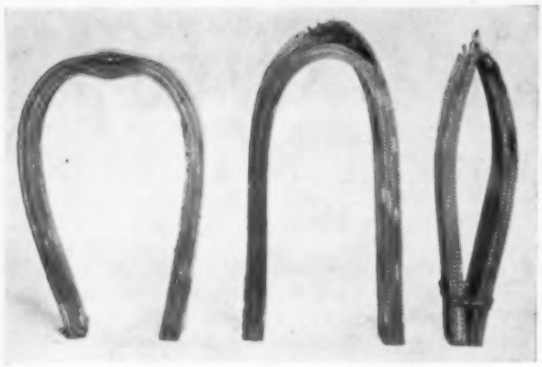


Fig. 3.—Typical Pulley Flexing Failures

If a 100-lb. load had been applied rather than the 150-lb. (68.2 kg.) load, and only belts with 25 ends had been used, all the failures would have been due to separation.

Society's Committee D-11 on Rubber Products by the Henry L. Scott Co., is used for the pulley test (Figs. 2 and 3). In this test, the small belt is made to conform to a 9/16 in. pulley and repeatedly flexed (175 cycles per minute) under a specified load of 150 lb. (68.2 kg.). The belt tension is computed to be 81½ lb. (37 kg.) rather than 75 lb. (one-half of the 150-lb. load), since the pull on the ends of the belt was not exactly vertical.

Free Bend Test:

In tire service, the contour of the flexing bend is not fixed, but depends somewhat on the stiffness of the belt. In an article on balloon tires,[1] Hale showed a picture of a tire in service where the side wall had actually folded back on itself. The tire shown was probably a 21/7.30 carrying 20 lb. of air, and the flexing was extreme. Folding puts the side wall under compression at one point and the free bend is simulated (Fig. 4) by gripping the test belt in jaws at the two ends and moving them back and forth with a reciprocal motion at high speed (1150 cycles per minute).

Jerking Test:

In addition to tire failures from separation, there are failures due to cord breaks and the ability of the cotton to withstand repeated stress is of considerable importance. With this in view, a jerking test was introduced. This test (Fig. 5) is intended to simulate the loading strains induced in a tire carcass in service. A dead weight applies a load which corresponds to the cord tension produced by the air pressure within the tire. Road blows, which are superimposed in service, are comparable to the force applied by the crank arm through the coil spring. The cord tension in the jerking test varies from a constant load of 0.89 lb. (0.40 kg.) per cord to a maximum intermittent load of 5.48 lb. (2.49 kg.) per cord. Belts with 17 cord ends per inch are under a constant tension of 45.2 lb. (20.55 kg.) and a maximum intermittent load of 280 lb. (127.4 kg.). The belt tension using 25 ends per inch is 66.4 lb. (30.2 kg.) constant load and 413 lb. (188 kg.) maximum intermittent load. In the jerking test, the belt is not supported vertically due to the development of failures in the jaws.

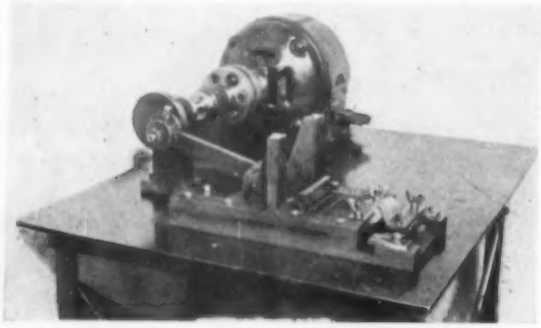


Fig. 4.—Free Bend Flexing Machine

[1] *Journal*, Soc. Automotive Engrs., Vol. 13, No. 1, p. 41.

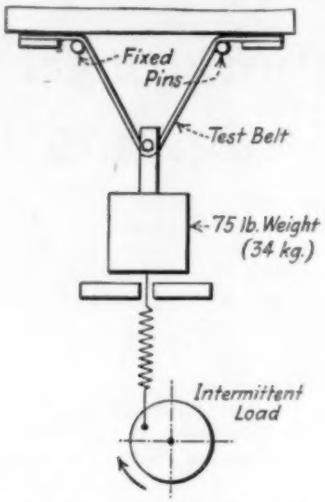


Fig. 5.—Diagram of Jerking Test

TABLE I.—REPRODUCIBILITY OF RESULTS.

Tests on Belts Cut from the Same Pad

Test	Pulley Flexing Test, cycles	Free Bend Test, cycles	Jerking Test, cycles
No. 1	30 600	57 100	62 100
No. 2	33 100	51 700	65 500
No. 3	31 000	54 600	63 200
No. 4	33 900		

REPEAT PULLEY FLEXING TEST MIXING NEW BATCHES OF THREE DIFFERENT COMPOUNDS[a]

	Compound A	Compound B	Compound C
Original Test	37 400 cycles	38 500 cycles	25 200 cycles
Repeat Test	37 600 "	43 900 "	27 700 "

[a] Each value is the average of four pulley flexing tests.

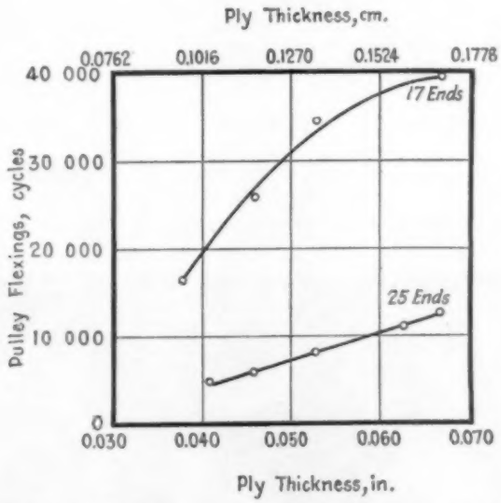


Fig. 6.—Showing the Influence of Ply Thickness and Number of Ends on Pulley Flexing Life

Results and Discussions

Table I gives data showing the range of reproducibility of the results of the three tests.

Table II (summary of detailed data given in Figs. 6, 7, and 8) shows that an increase in ply thickness and a decrease in the number of ends within the limits investigated increases the pulley flexing life; or in other words, it might be stated that with more rubber between the cords (better insulation from one cord to another), the pulley flexing life is increased. Better insulation of cords is gen-

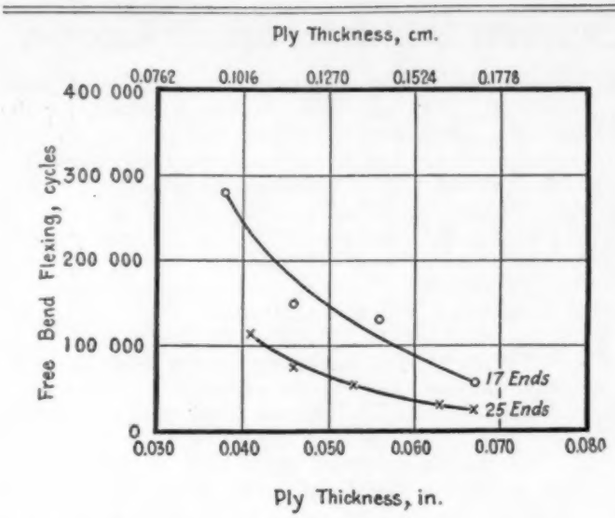


Fig. 7.—Showing the Influence of Ply Thickness and Number of Ends on Free Bend Flexing

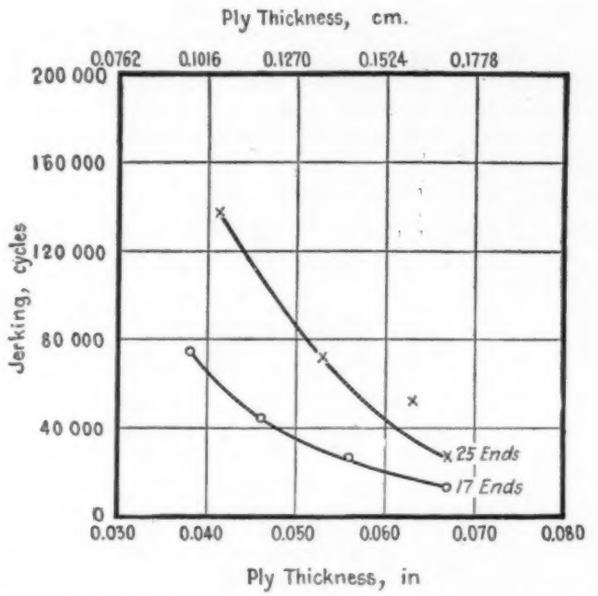


Fig. 8.—Showing the Influence of Ply Thickness and Number of Ends on the Ability to Withstand Repeated Jerking

The tests were made with the same tension per unit cord and not with the same tension on the belt.

TABLE II.—EFFECT OF INCREASED INSULATION OF CORDS ON BELT LIFE.

	Increase in Ply Thickness	Decrease in Number of Ends
Pulley Test	increases life	**increases life**
Free Bend Test	decreases life	increases life
Jerking Test	decreases life	decreases life

erally recognized to give longer tire life, especially in the case of heavy-duty tires. Accordingly, there is a strong indication that the pulley flexing test is a guide to the flexing life of present-day tires as stated by Gibbons, and it is an especially applicable method for heavy-duty tires.

It has been pointed out that when very low air pressures are used, the tire section tends to flex with more of a free bend; accordingly, in any development work looking toward the adoption of extremely low air pressures, the free bend test should be considered. Table II shows that although a decrease in number of

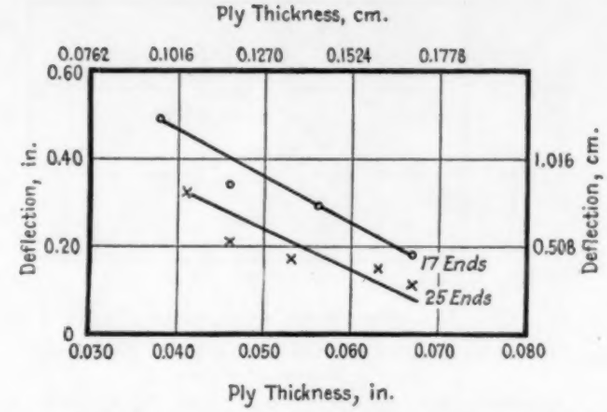


Fig. 9.—Showing the Influence of Ply Thickness and Number of Ends on the Stiffness of the Belt

The test was made by resting the 1-in. (2.54-cm.) wide belt over two supports 6 in. (15.25 cm.) apart and placing a load of 0.44 lb. (0.2 kg.) at the center and measuring the deflection at that point.

ends increases the belt life, an increase in ply thickness decreases the life. Examination of the belt during flexing indicates that compressive forces on the inside of the bend of the thicker belts cause failure.

From the above information it would be logical to expect a thick side wall super-tire to break down badly when run flat since free-bend flexing is approximated, and the authors believe that this is the general experience of motorists.

The value of the jerking test for determining the kind and amount of cotton is shown by determining the comparative jerking life of a 25-cord-end belt with that of a 17-cord-end belt under a jerking tension ranging from 45.3 lb. minimum to 280 lb. maximum. The 25-end belt lasted for 11,385,000 cycles whereas the 17-end belt withstood only 13,000 cycles.

In order to investigate the effect of the amount of insulation of the cords when different numbers of cord ends are used, the total belt tension is adjusted as described earlier so that the average individual cord tensions are equal. The tests (Fig. 8) show that the

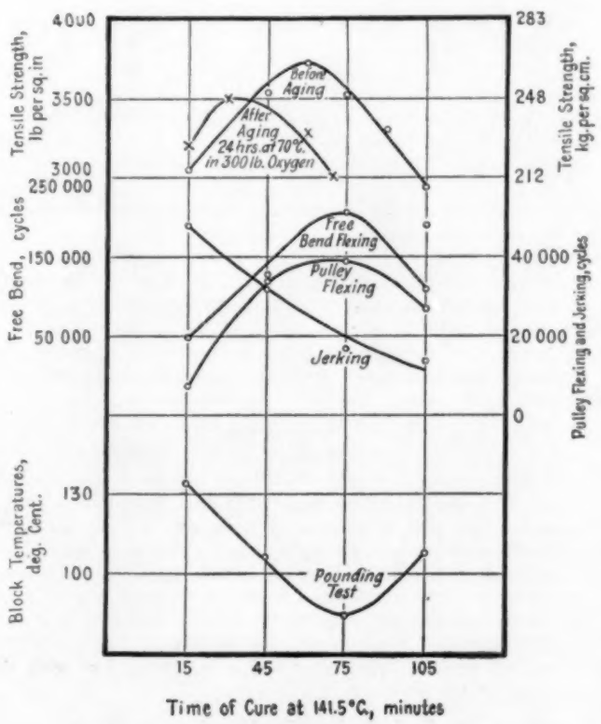


Fig. 10.—Showing the Influence of Cure

Seventeen-end belts with a ply thickness of 0.053 in. (0.135 cm.).

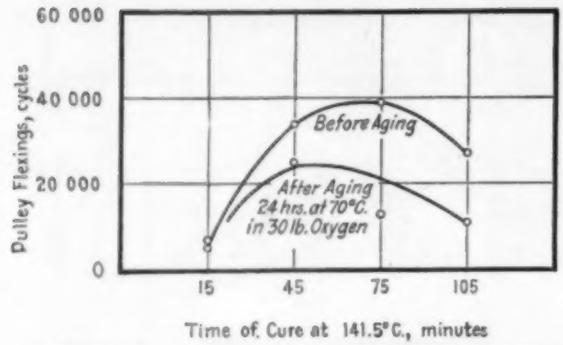


Fig. 11.—Showing the Influence of Aging on Pulley Flexing Over a Range of Cures

Seventeen-end belts with a ply thickness of 0.053 in (0.135 cm.).

best jerking life is obtained when the cords are poorly insulated; that is, with a maximum number of ends and a minimum ply thickness. It is apparently desirable to reduce the movement of the individual cords relative to one another to a minimum.

It should be kept in mind that continual flexing weakens the cords and that a tire with low cotton strength might have sufficient strength for all emergencies if the cords were not weakened due to poor flexing qualities.

The behavior of the test belts in the three tests is influenced to a considerable extent by the stiffness of the belt. The stiffness is determined by the amount and kind of rubber compound. For completeness, the effect of ply thickness and number of ends on stiffness is shown in Fig. 9.

Effect of State of Cure:

The tests shown so far have been made at a practical technical cure; namely, 45 minutes at 141.5° C. for the following compound:

Smoked Sheet	460 g.
Pale Crepe	460 g.
Sulfur	37 g.
Mineral Rubber	45 g.
Stearic Acid	4.5 g.
Medium Pine Tar Oil	18.0 g.
Age-rite Resin	18.0 g.
D. O. T. G.	9.0 g.
Red Label Kadox	280.0 g.

The effect of state cure is shown in Fig. 10. The maximum tensile strength for the compound comes at the 60-minute cure for the unaged stock and at the 30-minute cure for the aged stock. Superior flexing by the belts comes at an over-cure (75 minute). Test blocks of the compound subjected to repeated pounding[1] heat up and reach an equilibrium temperature which is a minimum for the 75-minute cure—the same cure that gives the best flexing. Since a resilient stock heats to a minimum, it is reasonable to assume that resiliency in a compound is one important consideration in choosing a tire carcass compound.

The apparently anomalous results of increased jerking life with decreased cure are possibly due, in part, to flow of the plastic under-cured rubber compound allowing better equalization of tension among the cords.

The influence of aging on the pulley flexing life is shown in Fig. 11. Over the range of cures, there is an appreciable reduction in flexing life.

Effect of the Composition of the Compound:

The flexing method of investigation has been applied to the problem of choosing rubber compounds for the pneumatic tire carcass. Two compounds that tested about 100 per cent apart in the pulley test when using a belt built with 17 ends and a thick ply were approximately equal when 25 ends and a thin skim were used. Good insulation of the cords accentuates differences in ply separation, and therefore good insulation is the preferred condition when testing compounds for ply separation. This influence of belt construction on flexing life with different compounds emphasizes the importance of studying tire construction in connection with the compounding of the pneumatic tire carcass.

[1]H. A. Depew and E. G. Snyder, "The Use of a Group of Performance Tests for Evaluating Rubber Compounds that must Withstand Repeated Compression," *Proceedings*, Am. Soc. Testing Mats., Vol. 29, Part II, p. 962 (1929). Rubber Age (N. Y.), Vol. 25, p. 371 (June 10, 1929).

Belgian Rubber Trade Grows

THE Belgian rubber industry throughout 1929 continued the progress which has been apparent for the last few years, with the result that Belgium is each year a greater competitor in international trade, according to reports from the U. S. Department of Commerce. During 1929, Belgian exports of rubber goods were valued at $10,192,200 — an increase of 22 per cent over 1928. The country still remains the seventh rubber-exporting country, but with the continued advancement it is gaining rapidly upon Italy, which ranks sixth.

Imports, valued at $6,300,700 in 1929, advanced by 13 per cent. With exports increasing almost twice as much as imports, the favorable balance of trade in rubber products increased from $2,807,400 in 1928 to $3,891,500 in 1929.

The remarkable progress which the Belgian industry has made is conclusively shown in the following table. In 1925, Belgium declared an unfavorable balance in excess of $3,000,000, but in 1929 the country maintained a favorable balance far exceeding that amount. The rapid advance in exports has been caused almost entirely by the activities of the tire industry headed by the Englebert Co. In 1929 tires accounted for nearly 88 per cent of the total exports.

In general, exports of tires and mechanical rubber goods increased in value during 1929, as compared with 1928, while those of rubber footwear and the miscellaneous class declined. Imports of all classes, however, manifested slight increases.

Value of Belgian Foreign Trade in Rubber Goods by Classes

(In thousands of francs*)

Class	Imports		Exports	
	1928	1929	1928	1929
Tires	96,300	99,158	260,914	319,262
Rubber footwear	13,257	22,485	9,148	8,101
Mechanical rubber goods	20,859	26,040	12,333	14,705
Miscellaneous rubber goods	69,143	78,710	29,679	24,148
Total	199,559	226,393	312,074	366,216

*The Belgian franc equaled $0.0278 in 1928 and 1929.

Belgian exports of automobile casings increased from an estimated 520,283 units in 1928 to 655,225 in 1929. Foreign markets which a few years ago were unacquainted more or less with Belgian-made rubber goods are now consuming Englebert tires in increasing quantities. The Englebert Co. has steadily enlarged its plant and is now producing some 4,000 automobile casings daily.

In the original equipment business Englebert leads. It is estimated that 20 per cent of the entire production is absorbed through this channel. The company has practically a monopoly on all of the original equipment of the American cars assembled in Belgium.

Exports of rubber footwear, which registered a large increase in 1928, suffered reverses during 1929. Exports decreased to $225,200 in 1929 from $254,300 in 1928. Belgium in 1928 was producing and exporting a line of low-priced canvas rubber-soled footwear, which was cutting into the trade of the other countries. Competition was felt particularly on the British markets—a condition which was believed absent during 1929.

Belgium, being one of the most highly industrial countries of Europe, is consequently a large consumer of mechanical rubber goods. The local industry is well developed and is exporting increasing quantities each year. Imports, however, still exceed exports and showed a large increase over 1928.

A Practical Method for the

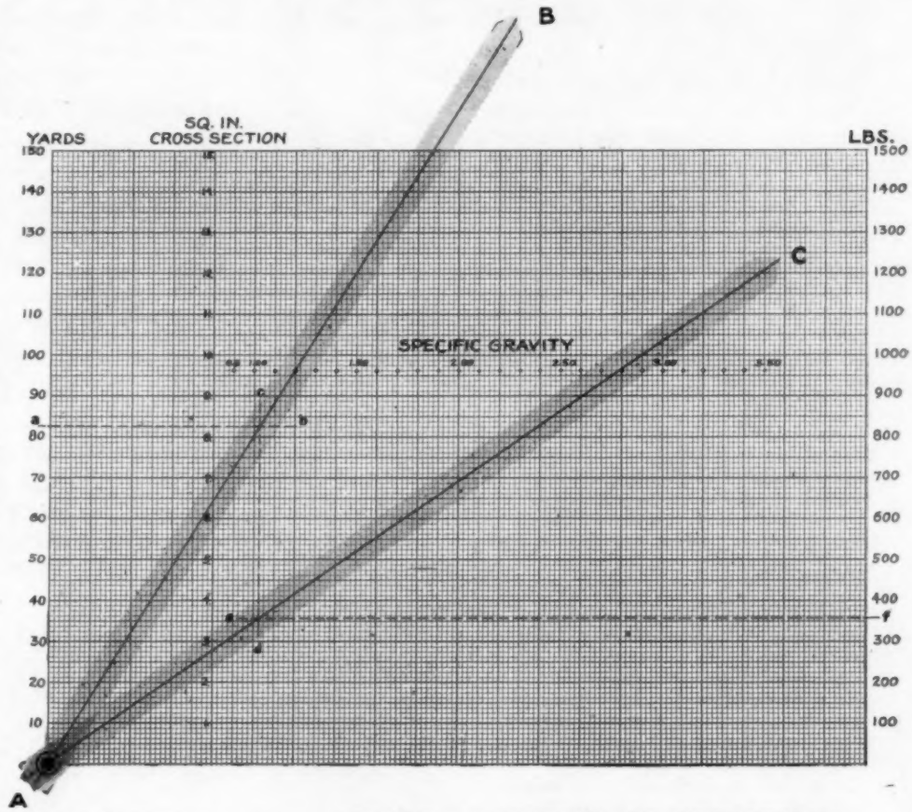
Determination of Weight of Stock Required at Calenders

By D. P. WEISBERG
The Manhattan Rubber Mfg. Division, Passaic, N. J.

ORDINARILY, when an order is received in a calender room calling for a certain length, width, and thickness of a rubber compound, the calender operator orders what he considers to be a safe minimum weight of rubber to complete the order. If the compound is one used frequently, and the amount ordered is in excess of his needs, no harm is done, except for the extra handling of material. If the amount ordered is short of the required weight, a delay is incurred until the remainder is supplied.

In the case of experimental compounds, if too great an amount is ordered, a balance is left which must be returned to the store room and kept on hand until the compound is either adopted into regular production, or worked off at a loss as scrap.

The excess trucking of stock from store room to calender and back, as well as a reduction in the weight of sample compound residues carried on hand may be avoided by the use of the accompanying chart. This chart may also be of value in cost departments when figuring total cost of stock necessary to fill an order.



To obtain the weight of compound required for an order it is necessary to know the specific gravity, the length in yards, and the width and thickness in inches. In using the chart to ascertain the weight, the only multiplication necessary is the width by thickness to get the cross section in square inches, then

1. Place the center line of either pointer so that it passes through the required cross sectional area on the vertical scale.

2. Place the center line of the other pointer so that it passes through the required specific gravity on the horizontal scale.

To read, proceed as follows:

1. Follow the horizontal line from the desired yardage on left hand border to its intersection with the center line of the specific gravity pointer.

2. Follow the vertical line from the above intersection to its intersection with the center line of the cross section pointer.

3. Follow the horizontal line from the last intersection to the right hand border and read the required weight in pounds.

CHART and METHOD OF OPERATION

The chart is made on cross-section paper (7½"x10" or larger as required) preferably with 20 divisions to the inch, with the yards, cross-sectional area, specific gravity and pounds arranged as shown. (The specific gravity scale should be located on the horizontal line corresponding with 96 yards.) Two celluloid strips, A-B and A-C, are pivoted to the lower left hand corner of the chart and a thin center line ruled or scratched on each strip. The chart is now ready for use. *Problem*—What is the weight of compounded stock required for an order of 82.5 yards, 2.77 sq. in. in cross-section (width x thickness), 1.20 sp. gr.? Place center line of A-B so that it passes through 1.20 on the specific gravity scale; place center line of A-C so that it passes through 2.77 on the sq. in. cross-section scale; then follow horizontal line *a*, *b* from the required 82.5 yards to its intersection with the specific gravity pointer, A-B; follow the vertical line *c*, *d* from this intersection to its intersection with the cross-section pointer, A-C; then follow the horizontal line *e*, *f* from the last intersection to the right hand border where the required weight of approximately 360 lbs. is obtained.

EDITORIAL COMMENT

Unemployment and a Suggestion

THE rubber manufacturing industry in the United States has reason to be proud of the high efficiency and general standards of its labor force. It can also be thankful for a certain stability and dependableness of this force. Labor in American rubber mills deserves the utmost consideration from the manufacturers and usually gets it but there is the question of unemployment which is so serious now that it might be opportune to give some attention to the problem to a view to maintaining the fine spirit of the rubber factory labor and rewarding it for past performances.

Many plans have been proposed in the past to relieve the distress arising from unemployment but now the General Electric Company comes forward with a proposal which can well be studied to advantage by the rubber industry.

The plan of the General Electric Company, as announced recently by Gerard Swope, president of the company, is designed to make funds available for employees during time of need or unemployment. The money will be raised through equal contributions by the employees and the company. Many provisions in the plan are an outgrowth of suggestions from committees of leading workmen.

At the same time Mr. Swope announced a plan for the stabilization of employment by reducing to a minimum the cause and effect of unemployment. Rules are set down for all factories as to what to do and what not to do when business is either on the increase or work is falling off.

According to the plan, up to 3 per cent of the contributions paid into the trust will be available for the relief of employees or former employees in need; up to 27 per cent of the normal contributions will be available for loans to employees who are members and the balance, approximately 70 per cent of the normal together with all emergency contributions and all interest on the funds will be available for unemployment payments.

The trust which will handle the funds will be in charge of a board of trustees and the General Electric Company will guarantee 5 per cent interest. The company will also pay the administration expense for the first two years.

Past and Future Forecasts

BACK in the days of the operation of the Stevenson restriction scheme and when America was being urged to "grow its own rubber," there were numerous authorities in the industry who prophesied a serious shortage of rubber in 1930 and 1931. At the Congressional hearings in Washington, held in January, 1926, the opinion was expressed that 1930 would see a production of 661,000 tons with a demand reaching 703,000. Today, while the figures for both consumption and production will be materially greater than those predicted, the statistical position of rubber is exactly the reverse. Production will probably exceed 850,000 tons with the consumption figures somewhere in the neighborhood of 775,000.

These prophecies of a shortage, however, were not ill-conceived at the time they were made. Unforeseen conditions and a world wide industrial depression will halt the steady increase which has marked yearly rate of rubber consumption, while the lack of a proper study of the extent of the huge Dutch native planting will throw out of line the production calculations of these experts.

Today, with the knowledge of 7,000,000 acres now planted to rubber throughout the world, only 70 per cent of which is in bearing, we are able to foresee a potential production in 1935 of 1,200,000 tons. Forecasts of consumption in that year would be difficult of calculation. There are still some optimists among the prophets, however, who believe that consumption will overtake production by that time, notably, Lieut.-Col. J. C. G. Kunhardt, who in his pamphlet on "The Future of Rubber," recently published by the Institution of the Rubber Industry, ingeniously argues that the depreciation in the productivity of estates and especially the native holdings has never been properly considered and that without new plantings the present acreage will not show the steady increase in production which has prevailed yearly heretofore. The exhaustion of areas over 25 years old and the abandonment of areas of considerable acreage through financial failure of the companies to operate profitably and many other causes, he believes, has not been given the serious thought it warrants.

The RUBBER AGE

Published on the 10th and 25th of each month. The Only Twice-a-Month Rubber Publication.

THE PALMERTON PUBLISHING CO., INC.

Editorial Office, 250 West 57th St., New York City

Telephones: Columbus 2923, 2924

THE RUBBER AGE is published on the 10th and 25th of each month by The Palmerton Publishing Co., Inc., a New York corporation. P. L. Palmerton, President; Earl D. Osborn, Vice-President and Secretary; Peter P. Pinto, Treasurer. Publication Office, 1-3 Peace St., New Brunswick, N. J. Subscription rates: Domestic, $2.00 a year; Canada, $2.50; foreign, $3.00; single copies, up to 3 months old, 20c.; over 3 months old, 50c. Advertising rates on application.

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Representatives in all the rubber centers of the United States, Canada, England, France, Germany and the Middle East.

The Rubber Industry's CURRENT NEWS

Financial—Personals—New Rubber Products—
Building Operations—Manufacturing—Exports

MANSFIELD TIRE FACTORY IS AT RECORD CAPACITY

The production of the Mansfield Tire & Rubber Company, Mansfield, O., is now in excess of 8,000 tires a day, the highest point in the history of the company, while more men are on the production payroll than have ever been used before. At present the company has 1,450 men in the production end and about 100 in the offices, with a monthly payroll of about $200,000, also a record for the firm.

"The industrial outlook, as far as the Mansfield Tire & Rubber Company is concerned, is quite favorable," George W. Stephens, president, reports. "We think we can maintain our present productive schedule, which is the largest we have ever had, through our fiscal year, which ends the last of October. We look for an easing off during the winter months, which is customary in this business, but we feel that it will not impair general business conditions in this city."

U. S. RUBBER WILL CLOSE PLANT AT CHELSEA, MASS.

The Revere Rubber Company, a subsidiary of the United States Rubber Company, is to close its factory at Chelsea, Mass., on July 12 and will move the balance of its equipment to Providence, R. I. Removal of the equipment was started several months ago. The rubber company now employs 350 workers, but in its half-century of business in Chelsea has provided employment for thousands of families, and at times has employed 2,000 workers.

Resolutions expressing regret at the removal of the company from Chelsea and commending the firm for its part in Chelsea affairs during the last 50 years were submitted to the Chelsea board of aldermen by Mayor John J. Whalen, at the suggestion of the Rev. Michael J. Scanlon, of St. Joseph's Church in that city.

To Reorganize Fisk Flap Tube

Paul H. Wendel, an attorney of 244 East Hanover street, Trenton, N. J., is attempting to organize a rubber company to take over the plant of the Fisk Flap Tube Company, Yardville, N. J., and manufacture a tube patented by the late C. Francis Fisk. Following the death of Mr. Fisk the plant was closed and it was recently sold to a group of Trenton men.

Planes Loop in Unison, Linked by Rubber Cords

Formation flying and looping by nine machines tied together with rubber cords was the most dangerous and spectacular event in the Royal Air Force pageant, which was held at Hendon Airdrome, near London, England, on June 28. These nine machines flew in formations of three each, with the three machines in each group tied to each other with a comparatively substantial rubber cord.

Tied in this way, the machines made many dangerous maneuvers, including looping together, and at the conclusion of the performance the three groups successfully dove together and then, suddenly zooming, spread out fan-like in what is known as "the Prince of Wales feather" evolution, the outward evolution stretching the cords until they broke.

PALMER ASBESTOS PLANT TO COST OVER $1,000,000

The Palmer Asbestos & Rubber Company, 2741 Clybourn Avenue, Chicago, Ill., is now making plans for the construction of the first unit of its new factory for the manufacture of mechanical rubber goods, asbestos brake lining and other products. The new plant will be located at St. Matthews, near Louisville, Ky.

It is estimated that the total cost of the projected buildings and equipment will be slightly in excess of $1,000,000.

Akron Factories Reopen

The factories of the Goodyear Tire & Rubber Company and the tire departments of the B. F. Goodrich Company at Akron, O., reopened on July 7 after having been closed down since June 28 for inventory. Employes of the companies took one week of their vacation periods while the plants were closed. The Firestone Tire & Rubber Company and the General Tire & Rubber Company did not close for inventories, as they had already shut down for that purpose early in the spring. Goodrich officials have not yet announced when the footwear and other departments of that factory will be closed for inventory.

GOODYEAR STARTS WORK ON ARGENTINE FACTORY

Construction of the new factory of the Goodyear Tire & Rubber Company near Buenos Aires, Argentina, was scheduled to start July 8 after having been delayed for one week. Plans for the erection of the factory have not developed as fast as expected, causing the delay. Fred W. Climer, manager of the factory personnel department at Akron, who is to be superintendent, and C. H. Bollinger, who will be comptroller, also postponed the date of their departure for their new posts.

The new plant, which will comprise four buildings, with a capacity of 1,000 tires and tubes a day, will be located in Hurlinghame, 16 miles up the La Plata River from Buenos Aires. Including machinery, the plant will cost approximately $1,000,000, and, when in full production, will employ 400 men.

DR. SOMERVILLE RETURNS FROM EUROPEAN JOURNEY

Dr. A. A. Somerville, vice-president of the R. T. Vanderbilt Company, New York City, who sailed for England on April 22, returned to this country on June 23 after visiting England, Scotland, France, Italy, Belgium, Germany, Poland, Russia and Latvia. In the course of his tour he delivered four talks on his work in connection with the physical testing of rubber, speaking before the London and Birmingham Sections of the Institution of the Rubber Industry, before a special Paris meeting called by M. Van Lede and before the Deutsche Kautschuk Gesellschaft at Frankfurt. While in Germany, he was the guest of Mr Vose of the firm of Lehman & Vose.

Dr. Somerville carried his motion picture camera with him on his tour and has brought back 40 reels of films taken of scenes he visited and of leading British and European chemists he met.

Army Men Meet at U. S. Plant

The annual dinner of the United States Army Quartermaster Association, Detroit Chapter, in conjunction with the Detroit General Depot United States Quartermaster Reserve Conference, was held at the clubhouse of the United States Rubber Company, Detroit, Mich., on June 27. The Detroit General Depot is charged with the duty of procuring motor transport vehicles and tires for Army use in case of emergency.

PATENTS ARE ASSIGNED TO AKRON RUBBER MEN

Several men associated with rubber companies at Akron were awarded patents by the United States Patent Bureau late last month. Four patents were assigned to the Goodyear-Zeppelin Corporation, but a majority of the others relate directly to the rubber industry.

A tire-forming machine, an invention of Raphael S. Kirk and assigned to the Goodyear Tire & Rubber Company, was found patentable on 13 original claims. The two inventions of Elove F. Maas, one of a fabric-shaping machine, and the other a band-building machine were recognized by officials as having 19 and six novel features, respectively. Rights to these inventions also were assigned to the Goodyear Tire & Rubber Company.

Other inventions found patentable by the bureau officials and assigned to the same company were Max C. Nelson's two inventions, a valve for acid tank patentable on seven claims, and a tensioning device for fabrics, patentable on eleven claims—a method of vulcanizing caoutchouc, an invention of Lorin B. Sebrell, recognized as having 11 distinctive claims, and a liner also invented by Sebrell; Wallace H. Campbell's deflating machine, Albert M. Clifford's antioxidant or age retarder; a control device for sheet-feeding mechanisms by Jorgen I. Haase; a wheel assembly by Richard S. Burdetter; a tire-lining apparatus by Harold M. Brown, Alno H. Trump's sheet cutting machine; an apparatus and method for treating fabrics, the invention of Ward T. Van Orman; and Edwin G. Templeton's trimming device for tire building machines.

The B. F. Goodrich Company was the assignee of Marion C. Reed's invention of a method of stabilizing aldehydes. This company was also assigned Clarence E. Snyder's method of making rubber tubes, and Harry J. Murry's conveyer apparatus embodying a trunk conveyer for carrying articles.

The National Erie Company was assigned Frank C. Vandegrift's inventions, one an extrusion apparatus, patentable on 11 claims, the other a similar invention patentable on six claims.

LOOKING FOR A JOB?

There are a number of good positions open in rubber factories. Consult Classified Section, this issue, Page 381.

CATALPO

for

Treads

Joins U. S. Rubber

Arthur D. Kunze, secretary of the Rubber Manufacturers' Association, who has just resigned that position to become assistant to the general manager of the United States Rubber Company mechanical goods department. Mr. Kunze, who was named secretary of the association last year, had been assistant secretary since 1923 and office manager since 1920. A native of Hastings-on-Hudson, N. Y., his first business experience was with the New York Central Railroad in a secretarial capacity between 1915 and 1920. In his new connection, he will assist Walter Gussenhoven, general manager of the "U. S." mechanical goods department, and will have his headquarters at Passaic, N. J.

Samuel H. Dodd

Samuel Howard Dodd, former president of the Vulcanized Rubber Company of New York City and Morristown, Pa., died at his home in East Orange, N. J., on July 3. Mr. Dodd, who was also a director and cashier of the India Rubber Company of New York, was 74 years old.

John D. Gillis

John D. Gillis, managing director of the Graesser-Monsanto Chemical Works, Ltd., a subsidiary of the Monsanto Chemical Works, St. Louis, Mo., died suddenly in London last month. Mr. Gillis, who was appointed to the London position in January of this year, was formerly assistant to the president of the Monsanto Chemical Works and before that was president of John T. Milliken & Company.

Mrs. Gillis and their two sons returned with the body on the *Aquitania*, and burial was made at Moorhead, Minn.

Harry C. Stutz

Harry C. Stutz, automobile manufacturer and former tire company executive, died on June 26 at the Methodist Hospital, Indianapolis, Ind., to which he had been taken three days previously suffering from appendicitis. Born on September 12, 1876, at Ansonia, O., Mr. Stutz first became interested in automobiles in 1897 and in 1903 first went to Indianapolis where he became an executive of the G. & J. Tire Company and of the Schebler Carburetor Company.

NEW GLIDER IS PLANNED TO HAVE RUBBER FRAME

What is termed a "pneumatic glider" is now being built for Taylor McDaniel, engineer of Washington, D. C., with all its wing spars, ribs and longerons of rubber tubes inflated with air. The entire skeleton will be covered with fabric, as in the ordinary airplane, and there will be nothing splinterable on the glider except the landing skid and the pilot's seat.

According to the inventor, the glider will cost less than $200 and, when deflated, can be folded up into a three by five foot box. The entire device will weigh less than 75 pounds, and it is claimed to have a considerable factor of safety in the event of a crash.

All the tubes are to be made of two thicknesses of rubber, wrapped with seven thicknesses of parachute cloth. The tubes forming the wing spars are to be ten inches in diameter, and there will be six spars set in tripod fashion. Thus the wing at the centre will be 20 inches thick, tapering to ten inches at the end. It will have a span of 26 feet and chord of six feet. The wing will have 12 ribs.

McDaniel says that the tail spar tubes, when pumped tight, will bear a weight of 4,480 pounds, hung on end, without bending. Control will be gained by warping the trailing edges instead of by ailerons. The glider is being built partly at Washington and partly in Baltimore, Md.

American Hard Rubber Outing

Employes of the American Hard Rubber Company at Akron, O., enjoyed their annual outing on June 28 at Brady Lake Park. An interdepartmental baseball game was the feature of the afternoon, and there were also individual sports, swimming, dancing and other forms of entertainment.

Rubber Stocks at New Lows

During the fortnight, several rubber company stocks dropped to new low levels for 1930 or longer, including Goodyear and Firestone common and Goodrich and United States Rubber preferred. Closing prices on July 3 compare as follows:

	Last Price		—1930—	
	July 3	June 18	High	Low
Aetna	5	—	8½	5
Ajax	1⅛	1⅛	2½	1
Amer. Hard Rubber	—	—	81	60½
Dayton "A"	—	—	3⅞	3¾
Falls	—	—	4¾	3
Faultless	—	—	37	33¾
Firestone	20½	20⅛	33⅛	20
do. 6% pfd.	72½	70	87⅞	69⅞
Fisk	2½	2½	5½	2⅜
do. 1st pfd.	7⅝	6⅞	21	6½
General	—	—	163	135
do. pfd.	—	86½	91	88
Goodrich	25	24	58½	22½
do. pfd.	80	87¼	104½	78
Goodyear	57	63¾	96⅞	54⅞
do. 1st pfd.	93⅛	95	102	90
India	—	18	25½	8½
Intercontinental	4	4¼	7½	3⅝
Kelly Springfield	3¾	3	6¼	3
do. 6% pfd.	35	35½	39	29
Lee	5	5½	11	4⅝
Mohawk	—	9	16⅝	8
do. pfd.	—	—	55	15
Norwalk	1⅝	1½	4	⅞
Pirelli	41	41	50⅞	39¾
Raybestos-Manhattan	29¾	28¼	58¾	28
Seiberling	6⅞	6	18½	5½
do. pfd.	—	—	78	40
U. S. Rubber	21½	20⅛	35	20
do. pfd.	42⅛	44	63⅞	41¼

Names in the News

DR. KARL ARNSTEIN, vice-president and chief engineer of the Goodyear-Zeppelin Corporation, became a citizen of the United States on June 26 at the Common Pleas Court in Akron. Dr. Arnstein came to the United States five years ago and applied for his first citizenship papers three years ago.

J. A. BERNINGHAUS, general manager of sales of the Monsanto Chemical Works, St. Louis, Mo., and V. E. WILLIAMS, in charge of the eastern district sales office at New York City, were elected assistant vice-presidents by the board of directors on June 24. They will continue in their respective capacities.

FRED M. HARPHAM, vice-president of the Goodyear Tire & Rubber Company, returned to Akron on June 25 after his voyage from Lakehurst, N. J., to Friedrichshafen, Germany, on the *Graf Zeppelin*. On the day of his arrival he described his trip to a group of balloon pilots and others assembled at the Allerton House in Cleveland for dinner as the guests of the Cleveland Advertising Club.

WILLIAM F. DICKSON, for many years affiliated with the shoe industry, has been elected vice-president of the Ground Gripper Shoe Company. His office will be at the New York City headquarers of the firm.

G. T. KEATING, of Moore & Munger, New York City, has just returned from a two-month combination business and pleasure tour of Europe, during which he visited France, Germany, Italy, Austria, Spain and Switzerland.

LAMMOT DU PONT, president of E. I. du Pont de Nemours & Company and chairman of the board of the General Motors Corporation, was re-elected president of the Manufacturing Chemists Association at the annual meeting last month at Atlantic City, N. J.

PAUL S. SHOAF, of the Goodyear Tire & Rubber Company, left the United States on July 4 for the Goodyear rubber plantations in Sumatra, where he will be manager of development and engineering for all of the company's rubber estates.

C. LOEFFLER CAPPER, of Dover, O., who was recently graduated from Ohio University, has accepted a position with the United States Rubber Company. For the past two years Mr. Capper has been student assistant chemist at the university.

JAMES H. HOLDEN has been appointed special sales representative on heavy service tires if the United States Rubber Company with headquarters at Hartford, Conn. Mr. Holden has spent his entire business experience with the United States tire organization, having entered the old Morgan & Wright plant in Detroit as a special student in the production department immediately after being graduated from Rhode Island College in 1922. For two or three years following this he was engaged in the chemical laboratory in experimental and development work, and in 1927 was appointed technical representative of the tire executive department.

ARTHUR G. UNDERWOOD, for several years manager of accessories sales for A. Schrader's Son, Inc., Brooklyn, N. Y., has been advanced to the position of assistant sales manager of the company. In his new capacity, Mr. Underwood will co-operate

A. G. UNDERWOOD

with ROY L. DEBRAUWERE, assistant secretary and sales manager of the Schrader company. Mr. Underwood is well known to the automobile accessory trade throughout the country. He was born and educated in Brooklyn, N. Y., and joined the Schrader organization in 1924.

S. W. WEIGER, associated with the Giant Tire & Rubber Company at Findlay, O., has been named a trustee of Findlay College in that city.

P. W. LITCHFIELD, president of the Goodyear Tire & Rubber Company, has sailed for Europe to attend the annual meeting of the British Goodyear organization and to survey business conditions and aeronautic developments in England. He will return to Akron on August 1. During the course of his visit, Mr. Litchfield will review the crude rubber situation, and will discuss airship affairs with Lord Hugh Trenchard, British air marshal, who is also a member of the Goodyear board of directors, with Dr. Hugo Eckener, commander of the Graf Zeppelin, and with others. Leaving Akron, Mr. Litchfield indicated that he expects a gradual pick-up in the tire business during the coming months and the resumption of normal conditions in 1931. He praised the McNary-Parker Bill to encourage commercial airship operations, as a constructive step toward establishing merchant marine of the air.

JAMES D. TEW, president of the B. F. Goodrich Company, was a radio speaker on June 28 over the WEAF network of the National Broadcasting Company, talking during his company's newly instituted "Uncle Abe and David" series. On the previous day's program, COLONEL DAVID M. GOODRICH, chairman of the board and son of the company's founder, DR. BENJAMIN F. GOODRICH, addressed the radio audience. The elder Goodrich and HARVEY D. TEW, father of JAMES D. TEW, were associated in Goodrich, Tew & Company, the first rubber concern in Akron and the forerunner of the B. F. Goodrich Company.

T. F. DUNN, manager of the foreign division of Wishnick-Tumpeer, Inc., New York City, has just returned from a European business trip of two and a half months. In the course of his trip, he visited England, France, Holland, Germany, Belgium, Spain, Italy, Austria and Czechoslovakia. Mr. Dunn, who visited agents and customers of his organization in every country, reports that business abroad is still quiet and shows signs of not having completely recovered from the slump of last winter and spring.

J. W. THOMAS, executive vice-president of the Firestone Tire & Rubber Company, and RUSSELL A. FIRESTONE, son of Harvey S. Firestone, president of the company, arrived in San Francisco on June 26 for a business tour of California. Both spoke at a conference of Firestone officials from Oregon, Washington and Northern California on the following day. They were accompanied by R. J. COPE, vice-president and general manager of the California Firestone organization, and R. C. TUCKER, vice-president and general sales manager.

CATALPO
for
Frictions

Rubber News Around the World

I. R. I. MAY EXTEND INTO CANADA AND AUSTRALIA

Under the leadership of R. D. Gartrell, director of development, Dominion Rubber Company, Ltd., Montreal, Que., together with Bruce Marr and R. Howard, of Kitchener, Ont., a Canadian Institution of the Rubber Industry is now being organized long the same lines as the I. R. I of Great Britain. Steps are also being taken to form a similar Institution in Australia, and it has been proposed that in the near future it will be possible to elect an Imperial Council comprised of members representing Australia, Canada and Great Britain. All technical papers will at that time be published in joint "Transactions," with the purpose of binding the sister Institutions more closely together.

The first meeting of the Canadian Institution will be held in the fall, but the work of organizing the technical men of the various rubber companies will continue during the next three months.

INDIA TYRE & RUBBER SELLS UNISSUED SHARES

The India Tyre & Rubber Company (Great Britain), Ltd., which recently opened its new plant at Inchinnan, Scotland, has placed the balance of its unissued capital at substantial premiums and at terms advantageous to the company. The authorized capital of the firm is £750,000 in £625,000 7½ per cent cumulative participating preference shares of £1 and £125,000 deferred shares of 1s. The amount just placed is £100,000 in preference and £20,000 in deferred shares.

The India Tyre & Rubber Company, which is said to have secured the financial support of a large insurance company, has arranged to supply tires for the omnibuses of a municipality near London to be paid for on a basis of ½d a mile of service.

PIRELLI COMPANY EARNED $2,503,127 DURING 1929

A report by the Italian auditors of the Pirelli Company of Italy has been received by the National City Company, showing that the company earned $6.89 per share on 363,129 shares of stock in 1929, the figure being a weighted average of the number of shares outstanding during the year. This compares with $6.98 a share earned on 310,000 shares of stocks in 1928.

Net sales for the year ended December 31, 1929, were $22,796,047; net earnings available for interest and profits taxes were $2,916,612; interest payments, $109,866; profits taxes, $303,618 and net profit, $2,503,127, against $2,166,677. Consolidated earnings do not include Pirelli Company of Italy's equity in undistributed earnings of the Pirelli International Company.

Semperit Earns $315,000

The balance sheet for 1929 of the Semperit Austro-American Rubber Works, Vienna, Austria, shows a net profit of 2,202,453 schillings, or approximately $315,000, as compared with 2,063,206 schillings earned for 1928. It is proposed to pay a dividend of 10 per cent. A sum of 300,000 schillings is being added to reserves, and 88,327 schillings is carried forward.

May Golf Ball Imports

Imports of golf balls into the United States during May numbered 263,016, valued at $85,554, as compared to April imports of 214,154 balls, worth $68,695, and with May, 1929, imports of 346,100 balls, worth $98,809 The unit value of the May, 1930, imports was 32.5 cents per ball, compared to 32.1 cents in April and 32.1 cents in March. All imports were from the United Kingdom.

Booklet on Stearic Acid

Stearolene, Ltd., Croft Street, Clayton, Manchester, has published a new booklet on "Stearic Acid in the Rubber Industry," tracing the developments that led up to the discovery of the value of that ingredient in the making of rubber products. It points out that, although rubber technologists drew attention to its possibilities only eight or nine years ago, the American rubber industry in 1929 consumed approximately 12,000,000 pounds of stearic acid.

United States Is Dominant In Reclaimed Rubber Trade

WITH production gaining 5 per cent and exports to twenty-six countries showing an increase of 23 per cent during the past year, the United States established even more firmly its position as the leading world producer and supplier of reclaimed rubber, according to Harry W. Newman.

Production advanced from 208,516 long tons in 1928 to 219,057 in 1929, while exports increased from 9,577 long tons in 1928 to 12,721 in 1929. These shipments went to twenty-six markets in 1929 in comparison with seventeen in the previous year.

Many elements contribute in making the United States the largest producer and exporter of reclaimed rubber in the world. The high standard of living in America enables many to purchase all varieties of rubber articles which in many countries are still considered objects of luxury. This creates an extensive domestic production with an ultimate large consumption, followed by a great turnover of discarded rubber goods for the junk man. Furthermore, the United States has 77 per cent of the total number of automobiles in the world, all of which junk approximately 74,000,000 tires annually. These factors upon the face make the United States the most potential among the nations in the reclaiming industry.

Other Nations Export Reclaim

The United States, however, is not the only country which is increasing the production and exports of reclaimed rubber. The United Kingdom, France, Italy and the Netherlands are all strengthening their exports. Germany, the one exception, showed a decline in exports during 1929, but this was due to the closing down of the principal reclaimed factory in that country. Exports necessarily decreased, but imports advanced more than 100 per cent.

The proximity of Canada, the American capital invested in the local rubber industry, the fact that Canada ranks as the third most potential rubber goods exporting country, and the lack of a large rubber reclaiming industry, all make Canada the foremost outlet of the United States for our surplus reclaimed rubber. In 1929 Canada took from United States exporters 19,050,155 pounds valued at $1,320,395—a slight gain over 1928.

United Kingdom Our Competitor

The United Kingdom is a competitor of the United States in foreign markets for the reclaimed product and at the same time a profitable market for our surplus, being the second best outlet. The United Kingdom took 2,635,233 pounds valued at $192,168 in 1928, increasing to 4,865,244 pounds valued at $329,803 in 1929.

The rapid rise of the Australian rubber industry to almost self sufficiency within the past two years makes that Commonwealth an important market at present for the American exporter of reclaimed rubber. In 1929 Australia took 2,135,163 pounds valued at $155,211 from the United States.

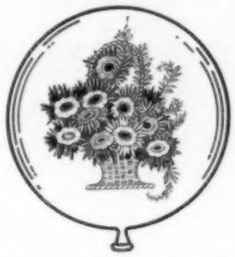
Germany appeared as the fourth market in 1929, taking 259,032 pounds valued at $22,660. Germany will perhaps not continue to be a promising market for the United States.

The Netherlands followed closely behind Germany in 1929, purchasing from the United States 255,955 pounds valued at $18,437. The country maintains a rubber industry of comparable significance when it is considered that the Netherlands is still considered primarily an agricultural State. With the continued success of the local rubber manufacturers and the present reclaiming industry in its infancy, the Netherlands should prove an outlet worthy of American attention.

Rubber Goods and Specialties

Oak Bouquet Balloons

Toy rubber balloons decorated with colorful bouquets in attractive vases and baskets make up the new series of bouquet prints offered by the Oak Rubber Company, Ravenna, O. The printing of these new balloons is in two colors on bases of assorted colors, producing a very handsome effect.



These balloons make effective displays for dealers either inflated or deflated. They are the latest addition to the Oak line, which has already had a variety of new numbers added to it this year, including the Onyx, Major Bubbles and Whirlwind prints and the Carnival assortment.

Non-Puncturable Tire

T. O'Connor, Queensland, Australia, has secured a patent on a tire in which a metal shield in three sections, joined together by spring clips having a solid tread section, is positioned on the tire casing fitted with two inner tubes divided by a layer of French chalk, rubber balls being embedded in cups in a rubber band on the tread section.

Brooks Canvas Footwear

A full assortment of canvas rubber-soled footwear has been added to the line of the Brooks Shoe Manufacturing Company, Swanson and Ritner Streets, Philadelphia, Pa., to complete the various numbers of

leather athletic shoes already merchandised by this firm. The new canvas numbers include shoes for gymnasium, wading wear, and for basketball, such as the Top Speed shoe illustrated. This has a special non-heat composition insole and a pure gum buffed outsole that will not scuff, blister or burn the foot. The uppers of this and all others of the canvas line are reinforced with rubber.

Wingfoot Non-Marking Sole

After three years of development, the Goodyear Tire & Rubber Company, Akron, O., is now ready to introduce its Wingfoot non-marking tan- and oak-colored soles. For some months past, prominent shoe manufacturers have been equipping shoes with these new soles and they are said to have proved satisfactory in use. In addition to not marking hardwood floors or floor coverings, these soles are guaranteed by Goodyear not to bulge, not to crack and not to break. The company offers to resole without charge any shoes on which Goodyear Wingfoot soles prove to be defective.

Rubber Bathing Jewelry

Bathing jewelry made of sponge rubber and of rubber and cork composition is now being widely displayed in London department stores. One necklace, in which squares of orange colored rubber sponge are joined by metal balls, threaded on wire and fitted with a screw fastener, is particularly effective and retails for the equivalent of $1.50. Twisted strands of brightly colored rubber cord are also popular.

Rubber Kitchen Labor-Saver

A novel device known as a "squink" has recently appeared on the British market as a kitchen aid for the housewife. It scrubs and dries the sink, scoops up all refuse and rapidly cleans pots and pans, besides being a useful adjunct to the bathroom. The "squink" is a perforated aluminum plate with a rubber squeegee and brush attached. The squeegee removes in a flash all waste from the bath or sink and may also be used as a window cleaner, while the brush with rubber bristles efficiently gathers up all bath or sink refuse.

Rubber Aircraft Springs

The results of certain experiments with rubber spring aircraft frames by K. Hohenemser in Germany show that rubber during load applications will adhere strongly to the surface of pressure. This leads to certain construction simplifications in applied manufacture. The hysterisis effect is traced to external and internal friction coefficients, and the experiments also have developed a method of testing the effectiveness of shock absorption by rubber. In an article in a German technical paper, Herr Hohenemser develops a practical example, showing the actual application of this method and determining the effect of pressure on the weight and volume of rubber springs.

Davids Mucilage Spreader

The Thaddeus Davids Ink Company, Inc., 95 Vandam Street, New York City, is now offering its three brands of mucilage and its semi-liquid paste in a new type of spreader top bottle. The rubber spreader cap is said to permit a smooth and steady flow of the liquid from any angle whether a dot, a line

or a spread is desired. The vacuum action of the device is claimed to eliminate the possibility of clogging. The bottle itself, which has a capacity of 2⅛ fluid ounces, is octagonal in shape and, therefore, easy to handle. It can be laid flat on the desk without rolling or spilling. The bottles are packed in individual display cartons.

All-Rubber Fender Flaps

The Tingley-Reliance Rubber Corporation, Rahway, N. J., is offering all-rubber flaps for automobile fenders, which it announces are easy to apply and designed not to mar or injure the fenders. No holes need to be drilled in their installation. The flaps are manufactured in two sizes for fenders up to 11 inches wide and for fenders 11 inches wide and up.

Belden Portable Cordlite

Factories, machine shops, garages and similar establishments will find many advantages in an innovation recently introduced by the Belden Manufacturing Company, 4647 West Van Buren Street, Chicago, Ill. The complete unit consists of the Bel-

den Cordlite with its rubber socket handle and unbreakable soft rubber plug, plus a metal clamp which slips over the socket handle, gripping it firmly. The other end of the metal clamp has rubber encased jaws that spread to grip material ranging from an eighth of an inch to 2½ inches in thickness. A friction hinge makes it easy to adjust the position of the light, and the handle can be turned conveniently.

Current Crude Rubber Items

MERLIMAU PEGOH ESTATE DOUBLES ITS DIVIDEND

While most rubber producers are reporting severe falls in profits and are reducing dividend payments as a result of the drop in price of the commodity, the Merlimau Pegoh Company, an estate with an issued capital of £594,700, has just announced a sharp rise in earnings and a doubled dividend.

Operations for the year ended December 31, 1929, including dividend from the Consolidated Eastern Plantations, Ltd., show a profit of £70,814, or about $345,000, compared with £27,875 in the preceding year. The crop from the 10,659 acres of rubber was 3,311,200 pounds last year and is estimated at 3,160,000 for this year, giving effect to the May tapping holiday.

Asiatic Planters Committee

The Asiatic Rubber Planters' Association of Malaya has appointed a sub-committee to consider the various schemes that have been suggested for relieving the depression in the rubber industry. This committee is expected to work in co-operation with the groups of British and European producers already organized for that purpose.

Leaflet on Bark Rot

A leaflet just issued by the Rubber Research Scheme Laboratories, Colombo, Ceylon, presents recommendations for the control of bark rot. R. K. S. Murray, mycologist of the laboratories, explains the danger of this disease setting in when tapping cuts are re-opened after the tapping holiday in May and recommends specific disinfectants to prevent this occurrence.

Rubber Exchange to Consider New Five-Ton Unit of Trading

RECOMMENDATIONS that the present "A" contract for rubber be raised from a trading unit of 2½ tons to one of 5 tons, or 11,200 pounds, instead of 5,600 pounds, and that its delivery terms be altered to include five grades of ribbed smoked sheets and four grades of crepe rubber, instead of the present indefinite standard grade and f. a. q. substitutes, were approved by the board of governors of the Rubber Exchange of New York last month.

Certification of rubber deliverable under the new contract and the inclusion of "in-between" grades, as proposed by the members, was rejected by the board. A special meeting of the membership was called for July 9, for discussion on the changes.

Upon adoption of the new "A" contract by the members of the exchange, the governors will draw up amendments to the rules providing for trading in multiples of one one-hundredths of a cent per pound, it was announced, and also make such minor other amendments as necessary.

The new schedule of commission rates, floor brokerages and charges applying to the altered "A" contract, which figures a little above one-half of the rates on the exchange's other contract, the No. 1 Standard, were voted. The building fund fees were unchanged.

If approved by the members at the July meeting the new contract will be effective on and after August 1, 1930, for deliveries beginning September 2, 1930.

Grades deliverable on the new terms at contract price are as follows: No. 1 ribbed smoked sheets, No. 1 thin crepe and No. 1 thick crepe.

Grades deliverable at differentials to be fixed at stated intervals based on the world market are: No. 2 thin crepe, No. 2 thick crepe, No. 2 ribbed smoked sheets, No. 3 ribbed smoked sheets, No. 4 ribbed smoked sheets and No. 5 ribbed smoked sheets.

The following rates of commission, floor brokerage and charges are the lowest that may be charged on new "A" contracts. The commission on each contract bought or sold for a customer residing in the United States or Canada shall be:

Based upon a price—	Members	Non-Members
Below 20c	$4.00	$8.00
20c to 24.99c, inclusive	5.25	10.50
25c to 29.99c, inclusive	6.50	13.00
30c and above	8.00	16.00

The commission on each contract bought or sold for a customer residing outside of the United States and Canada shall be $1.25 in addition to the above rates.

The floor brokerage on each contract bought or sold by one member for another giving up his principal on the day of the transaction shall be:

Based on a price—	Floor Brokerage
Below 20c	$1.25
20c to 24.99c, inclusive	1.40
25c to 29.99c, inclusive	1.50
30c and above	1.75

Straddle Commission

The commission on a complete straddle transaction for a customer residing in the United States or Canada shall be:

Based upon a price—	Members	Non-Members
Below 20c	$10.50	$18.50
20c to 24.99c, inclusive	13.30	23.80
25c to 29.99c, inclusive	16.00	29.00
30c and above	19.50	35.50

The commission to be charged shall be the rate prevailing on the contract price of the nearest month included in the straddle at the time the transaction is initiated.

For a customer residing outside of the United States and Canada $2.50 shall be charged in addition to the above rates of commission on a straddle transaction.

A straddle, which must be specifically designated as such at the time the initial orders are given, is a market operation for a single principal wherein orders to purchase a contract for one delivery month and sell another contract for another delivery month are simultaneously given by the said principal, and subsequently other orders are simultaneously given to close out the respective trades. The complete operation is made up of four trades which are complementary parts of one and the same transaction.

Closing Prices on Rubber Exchange of New York, Inc.

FROM JUNE 19 TO JULY 2, 1930

		Spot	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Sales
No. 1 Standard Contract of 10 Tons															
June	19	11.75	11.75	11.94	12.14	12.32	12.50	12.67	12.82	13.00	13.17	13.34	13.51	——	11
	20	11.81	11.82	12.01	12.20	12.38	12.56	12.75	12.90	13.05	13.20	13.37	13.54	——	49
	21	11.75	11.85	12.00	12.15	12.33	12.51	12.70	12.86	13.02	13.15	13.35	13.51	——	2
	23	12.00	11.92	12.12	12.32	12.51	12.69	12.87	13.05	13.22	13.39	13.56	13.73	——	28
	24	11.87	11.92	12.15	12.35	12.54	12.73	12.92	13.10	13.28	13.45	13.63	13.81	——	100
	25	12.10	12.18	12.35	12.63	12.80	12.96	13.13	13.32	13.51	13.70	13.89	14.08	——	35
	26	12.07	12.15	12.35	12.55	12.74	12.91	13.05	13.24	13.42	13.60	13.78	13.96	——	26
	27	12.30	12.35	12.52	12.70	12.90	13.10	13.30	13.47	13.64	13.82	14.00	14.17	——	27
	28	12.40	12.46	12.66	12.86	13.06	13.26	13.46	13.63	13.79	13.95	14.12	14.28	——	6
	30	12.28	12.25	12.46	12.68	12.87	13.07	13.25	13.42	13.57	13.72	13.88	14.04	——	10
July	1	12.22	12.25	12.38	12.52	12.71	12.90	13.09	13.28	13.46	13.65	13.83	14.01	14.19	42
	2	12.12	12.20	12.35	12.50	12.67	12.84	13.02	13.20	13.38	13.55	13.73	13.91	14.09	9
"A" Contract of 2½ Tons															
June	19	——	11.60	11.80	11.90	12.10	12.30	12.50	12.70	12.80	12.90	13.10	13.30	——	157
	20	——	11.70	11.90	12.00	12.20	12.40	12.60	12.80	12.90	13.10	13.20	13.40	——	305
	21	——	11.70	11.90	12.00	12.20	12.40	12.60	12.70	12.80	13.00	13.10	13.30	——	42
	23	——	11.80	11.90	12.10	12.30	12.50	12.70	12.90	13.00	13.20	13.40	13.60	——	194
	24	——	11.80	12.00	12.20	12.40	12.60	12.80	13.00	13.20	13.40	13.60	13.80	——	236
	25	——	11.90	12.20	12.50	12.70	12.80	13.00	13.20	13.40	13.60	13.80	14.00	——	153
	26	——	12.00	12.20	12.40	12.60	12.70	12.90	13.10	13.30	13.50	13.70	13.90	——	318
	27	——	12.20	12.30	12.50	12.70	12.90	13.20	13.40	13.50	13.60	13.80	14.00	——	234
	28	——	12.40	12.60	12.70	13.00	13.20	13.40	13.60	13.70	13.80	14.00	14.20	——	95
	30	——	12.10	12.30	12.50	12.70	12.80	13.00	13.20	13.30	13.50	13.70	13.90	——	30
July	1	——	12.10	12.20	12.30	12.50	12.70	12.90	13.10	13.30	13.50	13.70	13.90	14.10	162
	2	——	12.00	12.10	12.30	12.60	12.70	12.90	13.10	13.20	13.40	13.60	13.70	13.90	58

ROESSLER & HASSLACHER ANNUAL SALES MEETING

The Roessler and Hasslacher Chemical Co., New York, N. Y., held its annual sales and service convention at Niagara Falls on June 9, 10 and 11. In attendance were executives from the company's manufacturing plants and New York offices, district sales managers, sales and service men from various branches in the United States, Canada and Mexico. The convention was presided over by Dr. H. R. Carveth, president of the company.

Activities of the convention included inspection tours about the Niagara Falls plant, visits being made to several of the process departments. The business sessions were featured by pertinent papers discussing manufacture, service and sales of R. & H. products.

The annual banquet was held on the evening of June 10 at the General Brock Hotel, Niagara Falls, Ont. The speaker of the evening was J. E. Hatt, general manager, du Pont Cellophane Co., New York, N. Y.

Present were M. Kutz, G. A. Bode, A. Frankel, H. R. Saacke, G. F. Hasslacher, P. Moll, J. S. Burwell, R. M. Levy, F. C. Schumacher, of New York; Drs. S. Temple and C. J. Wernlund and Messrs. T. D Ainslie, L. M. White, F. E. Stewart and C. S. Williams, of Perth Amboy; C. B. McCloskey and T. Lenchner, of Pittsburgh; S. C. Harris, of Philadelphia; C. Seiler, of Baltimore; W. F. Zimmerli, of Akron; W. Vogel, of Mexico; A. C. Stepan, of Chicago; C. Dittmar, of Cleveland; and G. W. Goerner, of Boston.

The Niagara Falls attendance included Dr. M. J. Brown, P. J. Carlisle, Dr. H. R. Carveth, N. C. Cooper, W. Coopey, T. Coyle, Dr. F. J. Dobrovolny, J. Dunning, J. Faill. W. F. Flaherty, W. M. Gager, Dr. H. N. Gilbert, A. M. Hamann, Dr. E. A. Harding, Dr. D. A. Holt, J. A. Kenney, J. J. Landy, Dr. G. E. Lewis, P. L. Magill, R. W. Marshall, M. L. Ross, W. Ross, Dr. E. A. Rykenboer, D. V. McLean, D. O. Notman, L. V. Parkes, W. H. Vining, Dr. C. W. Tucker, and C. A. Vincent-Daviss.

National Machinery Dividend

The National Rubber Machinery Company has declared its regularly quarterly dividend of 50 cents a share on the common stock. This will be paid July 15 to stockholders of record as of July 1.

CATALPO

for

Mechanicals

Goodyear Textile Dividend

The Goodyear Textile Mills Company, Los Angeles, Cal., paid its regularly quarterly dividend of $1.75 a share on the preferred stock on July 1 to stockholders of record as of June 20. The common stock of the Goodyear Textile Mills Company is wholly owned by the Goodyear Tire & Rubber Company of California.

Discontinue Unfair Practices

Discontinuance of certain unfair trade practices has been agreed to by a corporation engaged in the sale and distribution of paints, enamels, varnishes and roof coatings, according to stipulations signed by it with the Federal Trade Commission last month. This corporation has agreed to cease and desist from using the words "rubberseal" or "rubbersealit" as trade names or brands so as to imply that its products are composed in whole or in part of rubber.

Radio Judgment Against Murray

Franklin J. Wolff, operating the radio broadcasting station WOAX at Trenton, N. J., was awarded $1,100 in federal court in a suit against the Murray Rubber Company of that city. Wolff claimed that the Murray company had agreed to pay $1,300 for 26 broadcast programs of Murray tires and tubes, but revoked the contract after only $200 had been paid.

"KEDS" PLANT SHUTS DOWN FOR FIVE-WEEK PERIOD

The "Keds" division of the National India Rubber Company, Bristol, R. I., subsidiary of the United States Rubber Company, was shut down on June 28 for a five-week period and will not resume operations until August 4. Approximately 325 employes have been laid off, according to a statement by Maurice Smith, Jr., factory manager, these employes consisting of wage and salaried workers, ranging from supervisors to operators.

On resuming operations the division will work on a five-day schedule, instead of four days as formerly. During the shutdown some of the workers of the division will be employed in making samples and doing other work in that department.

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HELP WANTED

MIDWESTERN rubber factory has opening for position of assistant production manager in department manufacturing golf balls. Must have had actual experience in turning out balls of proven merit on efficient basis. Splendid opportunity for man possessing technical and managerial qualifications. Address Box 560, THE RUBBER AGE.

WANTED—Young man with mechanical experience in the Rubber Industry, to become Sales Engineer for long established manufacturer of recording instruments for pressure, temperature, electricity and motion; and automatic controllers for temperature, pressure and humidity (both air and electrically operated types). Candidates preferred who have had both manufacturing experience and scientific education, and who are free to travel through the great industrial districts. Highest character references required. Write, stating experience, age and salary desired. Address Box 561, THE RUBBER AGE.

CHEMICAL ENGINEER or chemist for control, development and research work in the rubber industry. Principal work on composition soles and rubber heels. Give complete statement of training and experience, also personal history, in first letter. Give two college references and two business references in your home city. Replies will be held in confidence. Address—International Shoe Company, Rubber Plant, Hannibal, Missouri.

TECHNICAL CONTACT

WE WANT a chemist with laboratory and compounding experience to assist in maintaining technical contact between our laboratories and consumers. Reply fully by letter. GODFREY L. CABOT, INC., 940 Old South Building, Boston, Mass.

SALESMEN calling on manufacturing trades; interesting side-line; will not interfere with present lines. Address THE RUBBER AGE, Box 559.

EQUIPMENT WANTED

WANTED
Laboratory Experimental Calender
Chicago Rubber Clothing Company, Racine, Wisconsin.

Use this column for RESULTS!

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LATE MARKET PRICES

RUBBER—COTTONS AND FABRICS—CHEMICALS

NEW YORK, JULY 7, 1930

RUBBER

Crude

DURING the month of June the average spot closing price for ribbed smoked sheets at New York was 12.45 cents a pound, the lowest average for any full calendar month in the history of the industry. This compares with an average price of 14.24 cents in May and 20.64 cents in June, 1929. During the first week in July the New York price has averaged 12⅛ cents a pound, and the full month may see a still lower average price than that of June.

At the close of the fortnight there were conflicting rumors regarding possible restriction efforts to better the situation. The Malacca Rubber Planters' Association has passed a resolution favoring the reintroduction of the Stevenson plan in modified form, conditional upon legislation simultaneously to enforce a similar plan in the Dutch East Indies and Ceylon. As stated here a fortnight ago, we believe that the British and Dutch governments will be likely to heed any united request from the plantation interests in which these countries have close to $4,000,000,000 invested, because of the current feeling against our own new tariff laws.

Prices quoted on the New York outside market on July 7 were as follows:

Plantations—

Ribbed Smoked Sheets—			
Spot-July		.12 @	.12⅛
Aug.-Sept.		.12⅛@	.12½
Oct.-Dec.		.12¾@	.13
First Latex, crepe spot		.12¼@	.12⅜
Amber Crepe, No. 2		.11⅛@	.11⅝
Amber Crepe, No. 3		.10⅞@	.11⅛
Amber Crepe, No. 4		.10⅝@	.10⅞
Brown Crepe, Clean thin		.10⅝@	.11
Brown Crepe, specky		.10½@	.10¾
Liquid Latex, per gal.		.90 @	1.25

Paras—

Up-river Fine		.14 @	.14¼
Up-river Medium		Nominal	
Up-river Coarse		.07 @	.07½
Acre Bolivian, fine		.14½@	.14⅝
Caucho Ball, Upper		.07 @	.07¼
Islands, fine		Nominal	

Centrals—

Central, scrap		.07 @	.07¼
Esmeraldas		.07 @	.07¼

Balata—

Block, Colombia		Nominal	
Block, Ciudad		.41 @	.42

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers		
Spot-July	@	6⅛d
Aug.-Sept.	6⅛@	6¼d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers		
Spot	@	5½d

Scrap

Despite the depression in crude rubber prices, the production and consumption of reclaim continues with no appreciable decline. Collections of scrap are difficult, however, and prices lower, as the following quotations show:

(Prices to Consumer)

Auto tire peelings	ton	26.00	@28.50
Standard White auto	ton	40.00	@42.50
Mixed auto	ton	15.00	@17.50
Bicycle tires	ton	13.00	@15.00
Clean solid truck tires	ton	24.50	@25.00
Boots and shoes	cwt.	1.25	@ 1.37½
Arctics, untrimmed	lb.	.00¾@	.01
Inner tubes, No. 1	lb.	.06¾@	.06⅞
Inner tubes, No. 2, compounded	lb.	.03½@	.03⅝
Inner Tubes, Red	lb.	.03¼@	.03⅜
Air Brake Hose	ton	17.50	@20.00
Rubber Hose	ton	15.00	@17.50

Reclaimed

The proportion of reclaimed rubber used in May with respect to crude was higher than in either March or April despite the low price of the raw commodity. Prices, however, are naturally lower, with the quotations for the various grades closing as follows:

High Tensile

Super-Reclaim No. 1 Black	lb.	.10¾@	.11
High Tensile Red	lb.	.10½@	.10¾

Shoe

Unwashed	lb.	.06¾@	.07
Washed	lb.	.09 @	.09¼

Tube

No. 1 (Floating)	lb.	.11½@	.12
No. 2 (Compounded)	lb.	.08¾@	.09

Tires

Black	lb.	.06¾@	.07
Black, selected tires	lb.	.07 @	.07¼
Dark Gray	lb.	.08 @	.08¼
Light Gray	lb.	.09¼@	.09½
White	lb.	.11 @	.11¼
Truck, Heavy Gravity	lb.	.06¾@	.07
Truck, Light Gravity	lb.	.07 @	.07¼

Miscellaneous

Mechanical blends	lb.	.05 @	.05½
Red	lb.	.10½@	.11

COTTON and FABRICS

Cotton

DURING the month of June the average closing spot price for middling upland cotton at New York was 14.48 cents a pound, but the current quotation is only 13.30 cents. Actually the commodity is now down to its pre-war level similarly to several other commodities which have recently recorded new lows for all time.

Despite the efforts of the Farm Board, the bearish factors lined up against cotton can not be overcome, and a decline to the 10-cent level is being freely predicted. The acreage planted is heavy, the prospects for a good crop favorable, the carry-over heavy, and the manufacturing industry depressed, as is indicated by the fact that gray goods sold this month at the lowest figure reached since 1916.

The high, low and closing prices on the New York Cotton Exchange on July 7 were as follows:

	High	Low	Close	Close
		July 7		June 18
July	13.47	13.12	13.18	13.55
Oct.	12.97	12.78	12.79	12.92
Dec.	13.13	12.94	12.96	13.02

Tire Fabrics

Tire fabric prices have dropped lower in sympathy with the fall in cotton. Late quotations were as follows:

CORD

Peeler, carded, 23/5/3	lb.	.39½@	.40
Peeler, carded, 23/4/3	lb.	.41½@	.42
Peeler, carded, 13/3/3	lb.	.37 @	.37½
Peeler, carded, 15/3/3	lb.	.37½@	.38
Egyptian, carded, 23/5/3	lb.	.48¾@	.49¼
Egyptian, combed, 23/5/3	lb.	.54¾@	.55¼

CHAFERS

Carded, American, 8 oz.	lb.	.34 @	.35
Carded, American, 10 oz.	lb.	.34 @	.35
Carded, American, 12 oz.	lb.	.33 @	.34
Carded, American, 14 oz.	lb.	.31½@	.32½

LENO BREAKER

Carded, American, 8¼ oz.	lb.	.35 @	.38½
Carded, American, 10¼ oz.	lb.	.35 @	.38½

SQUARE WOVEN

Carded, American, 17¼ oz. 23-11 ply	lb.	.39½@	.40½
Carded, American, 17¼ oz. 10-ply	lb.	.31½@	.32½

Sheetings

Prices on sheetings experienced a sharp drop during the fortnight. Late quotations, according to the Textile Brokers' Association, were as follows:

40-inch, 2.50-yard	yd.	.09¾@	.09⅞
40-inch, 2.85-yard	yd.	.08½@	.08¾
40-inch, 3.15-yard	yd.	.09⅜@	.10
40-inch, 3.60-yard	yd.	— @	.08
40-inch, 3.75-yard	yd.	.06⅞@	.07
40-inch, 4.25-yard	yd.	— @	.05⅞

Ducks

Cotton ducks, unlike other fabrics, have held firmly in price during the past fortnight. Late quotations for the active grades remain as follows:

Belting and Hose	lb.	.33 @	.34
Enameling	lb.	.32 @	.32½
Single filling	lb.	.14 @	.14½
Double filling	lb.	— @	.16

CHEMICALS

WHILE the rate of production at rubber factories has yet to reach the high rate expected for the middle of the year, the demand for rubber chemicals and compounding ingredients continues at a steady and apparently undiminished volume. The chief feature of the fortnight in the price situation was another half-cent drop in the general quotations for carbon black. This was announced late in June and has helped to some extent to speed up orders for that commodity. Although the demand for blanc fixe is no heavier than heretofore, the price has been advanced to the extent of $5 a ton in carload lots because of the increase made in the new tariff schedules.

ACCELERATORS

Organic				
A-1	lb.	.24	@	.27
A-5-10	lb.	.33	@	.36
A-7	lb.	.55	@	.59
A-11	lb.	.62	@	.66
A-16	lb.	.57	@	.61
A-19	lb.	.58	@	.62
A-20	lb.	.64	@	.68
A-32	lb.	.90	@	.95
Aldehyde ammonia, crystals	lb.	.65	@	.70
Aniline oil, drums, f.o.b. works	lb.	.15	@	.16
Captax	lb.			
Crylene	lb.	.55	@	.65
paste	lb.	.45	@	.55
Di-Ortho-Tolyguanidine	lb.	.42	@	.44½
Diphenylguanidine	lb.	.30	@	.32½
Dipsol	lb.	4.30	@	4.50
Ethylidene aniline	lb.	.45	@	.47½
Formaldehyde aniline	lb.	.40	@	.42½
Heptene	lb.	.40	@	—
Hexamethylene-tetramine	lb.	.58½	@	.61
Lithex	lb.	.18	@	.20
Methylenedianiline	lb.	.37½	@	.40
Monex	lb.	3.25	@	—
Oxynone	lb.	.68	@	.80
Phenex	lb.	.75	@	—
R & H 40	lb.	.40	@	.42½
R & H 50	lb.	.40	@	.42½
R & H 397	lb.	.75	@	.77½
R-2	lb.	1.95	@	2.15
Safex	lb.	1.20	@	1.25
SPDX	lb.	.75	@	—
Super-Sulphur No. 1	lb.			
No. 2	lb.			
Tensilac, No. 39	lb.	.40	@	.42½
Tensilac, No. 41	lb.	.50	@	.52½
Thermio F	lb.	.50	@	.55
Thiocarbanilid, drums	lb.	.25½	@	.28½
Trimene	lb.	.75	@	—
base	lb.	1.20	@	—
Triphenylguanidine	lb.	.58	@	.62½
Tuads	lb.			
Ureka	lb.	.75	@	1.00
Vulcanex	lb.			
Vulcone	lb.			
Vulcanol	lb.			
Z 88	lb.	.50	@	.60
Zimate	lb.			
Inorganic				
Lead, sublimed blue	lb.	.08¼	@	—
Lead, white	lb.	.08½	@	.08¾
Litharge, domestic	lb.	—	@	.08¼
Magnesia, calcined, light	per 100 lb.	5.35	@	5.45
heavy	per 100 lb.	3.65	@	3.75

COLORS

Blacks (See Compounding Materials)

Blues

Prussian	lb.	.35	@	.36
Ultramarine	lb.	.06	@	.32

Browns

Sienna, Italian	lb.	.05½	@	.12½
Umber, Turkey	lb.	.04½	@	.07

Greens

Chrome, light	lb.	.30	@	.32
medium	lb.	.31	@	.33
dark	lb.	.34	@	.36
Chromium Oxide, bbl.	lb.	.34½	@	.35½

Reds

Antimony crimson, 15/17	lb.	.40	@	.44
sulfur, free	lb.	.56	@	.66
golden 15/17 F.S.	lb.	.20	@	.25
Indian English	lb.	.08	@	.11
Domestic (Maroon)	lb.	.11	@	—
Oximony	lb.	.13¼	@	—
Red oxide, pure	lb.	.10	@	.12
Venetian rec	lb.	.03	@	.06
Vermillion, quicksilver, English	lb.	1.75	@	1.80

White-

Lithopone, Akcolith	lb.	.05 3/5	@	.06
Lithopone, Albalith	lb.	.05¼	@	.05¾
Lithopone, Azolith	lb.	.05¼	@	.05¾
Lithopone, Vanolith	lb.	.05¾	@	—
Titanox B, f.o.b. St. Louis,	lb.	.07¼	@	.07¾
Titanox C, f.o.b. St. Louis,	lb.	.07¾	@	.08¼

Zinc Oxide—American Process

American Azo:				
ZZZ (lead free)	lb.	.06½	@	.07
ZZ (leaded)	lb.	.06⅝	@	.06⅞
Horsehead Brand:				
Special	lb.	.07	@	.07½
XX Green	lb.	.07	@	.07½
XX Red, lead free	lb.	.06½	@	.07
Kadox, black label	lb.	.10⅜	@	.10⅞
blue label	lb.	.09⅝	@	.09⅞
red label	lb.	.08	@	.08½

Zinc Oxide—French Process

White seal	lb.	.11⅝	@	.11⅞
Green seal	lb.	.10⅝	@	.10⅞
Red seal	lb.	.09⅝	@	.09⅞

Yellows

Chrome	lb.	.17	@	.17½
Ocher, French medium	lb.	.02	@	.03
domestic	lb.	.01⅝	@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85	@	24.50
Ammonia carbonate, lump	lb.	.07½	@	.07¾
Asbestine	ton	14.75	@	18.00
Barium carbonate	lb.	.03½	@	.05
Barium Dust	lb.	.05	@	.06
Barytes southern off-color	ton	12.00	@	18.00
Western prime white	ton	23.00	@	—
imported	ton	27.00	@	36.00
Basofor	lb.	.04½	@	—

Blacks

Arrow "Aerfloted"	lb.	.04½	@	.09½
Bone Black	lb.	.06	@	.12½
Carbon, compressed	lb.	.05	@	.10
Carbon, uncompressed	lb.	.05	@	.10
Disperso, f.o.b. Louisiana	lb.	.046	@	—
Disperso, f.o.b. Texas	lb.	.04½	@	—
Drop Black	lb.	.06	@	.14
Fumonex	lb.	.04½	@	.08
Excello, compressed	lb.	.05	@	.09
Gastex, f.o.b. Texas	lb.	.04	@	.05¼
Lamp Black	lb.	.10	@	.40
Micronex	lb.	.04½	@	.09½
Thermatomic-Thermax	lb.			
Flex	lb.			
P-33	lb.			
United carbon, fob Tex	lb.	.04½	@	.09½
Velvetex carbon	lb.	.04	@	.06
Blanc fixe dry f.o.b. works	ton	80.00	@	90.00
Carrara filler	lb.	.01¾	@	.02
Catalpo (fact.)	lb.	.02	@	—
Clay, China, domestic	ton	8.00	@	9.00
Aerfloted Suprex	ton	10.00	@	22.00
Congaree, c. l. f.o.b. mine	ton	9.00	@	—
Dark Blue Ridge	ton			
Dixie	ton			
Langford	ton			
Lexington	ton	10.00	@	22.00
Mineral Flour, c. l. fob mine	ton	20.00	@	23.00
Par	ton			
Tensulite		15.00	@	—
Glues, extra white	lb.	.22	@	.26
medium white	lb.	.20	@	.24
Magnesia, carbonate	lb.	.08¾	@	.11
Mica, white water grnd.	lb.	.06	@	.08
Off color (biotite)	lb.	.05	@	.07
Rotten Stone powdered)	lb.	.02	@	.05
Soapstone, powdered	ton	15.00	@	22.00
Starch, powdered	cwt.	3.72	@	4.02
Talc, domestic	ton	12.00	@	15.00
Pyrax A	ton			
Whiting, commercial	cwt.	—	@	1.00
English cliffstone	cwt.	1.75	@	2.00
Quaker	ton			
Superfine	ton	10.00	@	12.00
Sussex	ton			
Witco	ton	20.00	@	—
Zinc Carbonate	lb.	.09½	@	.10¼
Zinc Stearate	lb.	.23	@	.24½

MINERAL RUBBER

Genasco (factory)	ton	50.00	@	52.00
Granulated M. R.	ton			
Hard Hydrocarbon	ton			
Paradura	ton	62.50	@	65.00
Pioneer, MR, solid	ton	40.00	@	42.00
Pioneer-granulated	ton	50.00	@	52.00
R & H Hydro-Carbon	ton	27.05	@	29.00
Robertson, MR, solid	ton	34.00	@	80.00
M.R. (gran)	ton	38.00	@	80.00

SOFTENERS

Acids

Nitric, 36 degrees	cwt.	5.00	@	5.25
Sulfuric, 66°	cwt.	1.60	@	1.95
Tartaric, crystals	lb.	.38	@	.38½

Acids, Fatty

Laurex	lb.	.15	@	.16
Stearex	lb.	.15	@	.19
Stearic, double pressed	lb.	.17	@	.22

Alkalies

Caustic soda, 76%	cwt.	3.76	@	3.91
Soda ash, 58% C.L.	cwt.	1.40	@	

Oils

Corn, refined, bbls.	lb.	.10	@	.10¼
Cottonseed, crude	—	—	@	.07¼
Cycline	gal.	.27	@	.34
Degras (c.l. 100 bbls.)	lb.	.03¾	@	—
Less c.l. (10-25 bbls.)	lb.	.04	@	—
Lots less than 10 bbls.	lb.	.04¼	@	.04½
Fluxrite	lb.	.06½	@	.06½
Palm Lagos	lb.	.07⅜	@	.07½
Niger	lb.	—	@	.07¼
Para-Flux	gal.	.17	@	—
Petrolatum, white	lb.	.08	@	.08½
Pigmentaroil	gal.	.21	@	.36
Pine, steam distilled	gal.	.65	@	.70
destructively distilled	gal.	.55	@	.58
Witco Palm Oil	lb.	.11	@	—
Witco Softener (f.o.b. wks.)	lb.	.02	@	—

Resins and Pitches

Pitch, Burgundy	lb.	.06½	@	.07½
coal tar	gal.	.05½	@	.06
pine, 200 lb. gr. wt.	bbl.	9.00	@	10.00
Rosin, grade K, 280 lb. bbl.	—	—	@	6.30
Pigmentar	lb.	.038	@	.0446
Tar Retort, 50 gal.	bbl.	13.50	@	15.00

Solvents

Acetone, pure	lb.	.11	@	.12
Alcohol denatured, No. 1 bbls.	gal.	.43	@	.45
Benzol, 90%	gal.	.21	@	.23
Carbon bisulphide	lb.	.05½	@	.06¼
Carbon tetrachloride	lb.	.06¼	@	.07
Dryolene (f.o.b. Okla.)	gal.	.10	@	.10½
Gasoline, steel bbls.	gal.	.16	@	—
Naphtha, solvent	gal.	.35	@	.40
Rub-Sol (f.o.b .Okla.)	gal.	.09	@	—
Turpentine, spirits	gal.	.48	@	.54
wood	gal.	—	@	.45
destructively distilled	gal.	.40	@	.43

Waxes

Beeswax, white	lb.	.51	@	.53
Carnauba	lb.	—	@	.34
Ceresin, white	lb.	.10	@	.11
Montan, crude	lb.	.06½	@	.07
Ozokerite, black	lb.	.24	@	.25
green	lb.	.26	@	.30

Paraffin (c. l.—f.o.b. N. Y.)

Yellow crude scale	lb.	.02½	@	—
White crude scale 124/126	lb.	.02½	@	—
Refined, 125/127	lb.	.03⅝	@	—
Refined, 128/130	lb.	.03¾	@	—
Refined, 135/137	lb.	.05¼	@	—
Refined, 138/140	lb.	.07¼	@	—

ANTI-OXIDANTS

Agerite, Resin	lb.			
Powder	lb.			
White	lb.			
Albasan	lb.	.70	@	.75
Antox	lb.			
B-L-E	lb.	.57	@	.60
Neozone	lb.			
Oxynone	lb.	.68	@	.80
Resistox	lb.	.54	@	.57
Stabilite	lb.	.57	@	.62
Stabilite Alba	lb.	.70	@	.75
VGB	lb.	.55	@	.66

SPECIALTIES

Sunproof	lb.	.35	@	.37½
Tonox	lb.	.56	@	.60

SUBSTITUTES

Black	lb.	.08	@	.14
White	lb.	.10	@	.16
Brown	lb.	.08	@	.15

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03½	@	.04½
Sulfur flour, Ref'n'd, 100% pure (bags)	cwt.	2.40	@	2.75
Commercial (bags)	cwt.	1.75	@	2.10
Vandex	lb.			

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

HOW rubber production was affected by the May tapping holiday is partially shown in the decline of stocks of the commodity on the Malaya mainland. This figure dropped abruptly from 39,758 long tons as of April 30 to 26,482 long tons on May 31. The difference of 13,276 long tons is approximately equal to the decline in Malayan production as computed by the Department of Commerce.

Meanwhile, warehouse stocks at London and Liverpool continue to mount to new high levels. The total inventory for the two ports was figured at 107,192 long tons as of June 28, compared with 104,750 long tons as of June 14.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available.

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Although the closing down of two large Akron factories from June 28 to July 7 will undoubtedly cut down this country's consumption of rubber, there are certain indications of a coming increase in tire demand. Gasoline consumption in May was the highest for any month on record, excepting July and August, 1929. This denotes a real increase in automobile use and should be followed by greater tire buying through the country in the summer months.

Latest figures covering imports and exports from the leading producing and consuming countries have been added to the appropriate tables in this section.

U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	19.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	28,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,795,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,189	13,123,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,783	20.64	523,599
1927:							
July	37,677	21,678,259	37.53	1,958	1,569,853	35.59	35,719
Aug.	32,816	26,396,981	75.92	1,809	1,382,768	34.12	31,001
Sept.	33,301	25,314,412	33.94	3,500	3,036,929	38.74	29,801
Oct.	30,184	22,163,282	32.78	2,513	2,042,713	36.29	27,67[illegible]
Nov.	28,592	27,395,428	31.69	2,469	2,014,196	36.43	26,123
Dec.	30,737	22,213,574	32.26	2,655	2,245,754	37.77	28,082
1928:							
Jan.	39,107	30,278,444	34.56	1,988	1,734,990	38.96	37,119
Feb.	33,663	27,763,655	36.82	2,738	2,229,589	36.35	30,925
Mar.	40,611	32,103,042	35.29	3,718	2,587,435	31.07	36,893
Apr.	37,935	27,287,266	32.11	2,272	1,415,024	27.80	35,663
May	31,059	19,058,672	27.39	2,399	1,386,307	25.80	28,660
June	27,765	14,121,219	22.71	2,621	1,400,697	23.86	25,144
July	31,258	14,144,765	20.20	3,087	1,451,446	20.99	28,171
Aug.	31,204	12,860,150	18.39	2,977	1,084,646	20.37	28,227
Sept.	39,235	16,512,019	18.50	3,038	1,384,148	20.34	36,797
Oct.	44,658	18,200,332	18.44	2,405	1,085,407	20.15	41,653
Nov.	36,519	14,878,441	18.19	2,788	1,207,089	18.52	33,731
Dec.	43,511	17,580,966	18.04	2,738	1,165,743	19.00	40,773
1929:							
Jan.	57,564	22,872,943	17.74	3,663	1,773,401	21.61	53,901
Feb.	64,265	24,760,111	17.20	2,955	1,374,783	20.77	61,310
Mar.	50,694	20,280,905	17.98	4,218	2,094,037	22.16	46,336
Apr.	55,725	25,542,726	20.46	3,293	1,624,237	22.02	52,432
May	51,161	24,355,511	21.25	2,886	1,349,690	21.24	48,325
June	41,663	18,799,307	20.14	3,152	1,470,746	20.83	38,511
July	43,944	19,342,147	19.65	3,424	1,590,411	20.73	40,520
Aug.	37,222	16,530,090	19.83	2,644	1,222,217	20.80	34,578
Sept.	34,472	15,214,485	19.70	2,011	861,068	19.11	32,461
Oct.	38,163	16,192,261	18.94	2,614	1,190,510	20.33	35,549
Nov.	43,507	18,189,305	18.66	2,929	1,300,354	19.82	40,578
Dec.	42,952	17,573,330	18.27	2,745	1,007,279	16.38	40,207
1930:							
Jan.	47,496	17,793,563	16.72	3,144	1,077,415	15.30	44,352
Feb.	42,687	14,798,240	15.48	2,280	960,790	18.80	40,407
Mar.	44,976	14,653,243	14.54	3,187	1,192,708	16.71	41,789
Apr.	45,423	14,783,605	14.53	2,688	892,582	14.82	42,735
May	42,692	13,373,282	13.98	3,154	1,085,432	15.37	39,538
June							

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1923	1924	1925	1926	1927	1928	1929	1930
Jan.	30,106	29,058	29,638	32,196	31,518	34,403	43,002	36,669
Feb.	30,149	25,736	29,761	31,136	30,137	33,702	41,594	32,726
Mar.	36,629	28,385	33,498	32,936	36,141	35,688	44,730	35,914
Apr.	29,085	27,129	34,139	32,696	35,871	32,772	47,521	40,207
May	36,155	25,845	35,322	29,364	34,592	37,383	49,233	39,902
June	24,272	22,753	35,822	28,598	33,801	37,676	43,227	
July	17,685	23,396	36,053	27,577	29,219	37,407	41,526	
Aug.	20,359	28,982	35,909	34,533	33,460	42,927	38,274	
Sept.	17,594	31,497	31,691	32,904	27,214	39,882	34,707	
Oct.	21,321	31,520	29,047	29,836	26,790	40,357	34,800	
Nov.	20,437	27,289	28,853	28,080	26,792	37,461	27,659	
Dec.	31,902	27,199	28,748	26,293	25,492	31,232	23,531	
Totals	305,694	328,769	388,481	366,149	371,027	441,840	469,804	

Figures on Quarterly Basis

Quarter	1923	1924	1925	1926	1927	1928	1929	1930
Jan./Mar.	96,776	87,609	95,263	94,301	99,216	103,558	128,565	101,610
Apr./June	89,493	75,674	104,099	87,109	103,242	103,500	139,292	
July/Sept.	55,621	83,813	99,493	93,793	89,210	117,573	113,746	
Oct./Dec.	63,617	92,656	85,789	83,212	80,860	117,597	84,872	
Totals	305,507	339,752	384,644	358,415	372,528	442,227	466,475	

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Tota
Apr. 12	7,026	1,235	1,527	7	9,795
Apr. 19	6,013	493	1,109	21	7,636
Apr. 26	5,558	642	1,224	—	7,424
May 3	7,703	1,384	1,806	25	10,918
May 10	6,863	891	1,271	11	9,036
May 17	8,359	650	1,874	30	10,913
May 24	6,041	741	1,500	162	2,444
May 31	6,532	738	1,746	54	9,070
June 7	6,443	1,020	1,971	24	9,458
June 14	5,933	631	1,586	68	8,218
June 21	5,823	886	1,693	36	8,438
June 28	6,732	710	921	10	8,373

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave
1928																																
February	87½	87¾	87¾	87¾		86¾	87	86¾	84½	83¾	83¾			82	32½	31¾	31¾	31¼		30¾	28¾		29	28½	28½		29	29½			22¾
March	29	28¾	28¾	28¾		28¾	26¾	26½	25¾	25¾		24¾		24¾	25½	25¼	25¼			26¾	26¾		27¼				27¾	27¾			24
April		27¾	27½	27½																												
May		17¾	17¾	18¼		19¾		19¾	19¾							17¾	18¾															
June		19¾	19¾	19¾		19¾		19¾	19¾																							
July																																
August		19¾	19¾	18¾		19¾		19¾	19¾																							
September																																
October		18¾	18¼	18¾		18¾		18¾	18¾																							
November		18¾	18¾	17¾		17¾		18¾	18¾																							
December		—																														
1929																																
January		18¾	18¼	18¼		18¾		18¾	18¾																							
February		22				22¾		22¾	22¾																							
March		26		26		26		25	25¾																							
April		23¾		22¾		22¾		20¾	22½																							
May		19¾		19¾		19¾		20¾	21¾																							
June		21¾		21¾		21¾		21¾	21¾																							
July		20¾		21		21		21	20¾																							
Aug.		21¾		21		20¾		20¾	19¾																							
Sept.																																
Oct.		19¾		19½		19¾		19¾	19¾																							
Nov.		17¾		17½		17¾		17¾	17¾																							
Dec.				16¼		16¼		16¼	16¼																							
1930																																
January		15¾		15¾		15¾		15¾								15¾	15½															
February		15¼				15¾		15¼	15¼							15¾	15½															
March		16¾		15½		15½		15¼	15¼							16¼	15¾															
April		14¾		14¾		14¾		14¾	14¾							14¾	14½															
May																																
June		13¾		13¾		13¾		13¾	13																							
July		12¼		12																												

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.76
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents	1929 Cents	1930 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25	20.14	15.24
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75	23.97	15.85
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	26.32	24.55	15.34
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	18.97	21.18	14.98
May	15.25	27.39	18.89	58.47	47.75	40.76	18.99	21.46	14.24
June	15.11	26.88	18.81	77.26	42.50	37.25	19.59	20.64	12.45
July	14.67	26.10	22.16	103.16	41.03	34.87	19.40	21.30	—
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	19.46	20.59	—
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	18.47	20.37	—
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	18.83	19.67	—
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	18.26	16.62	—
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	17.97	16.12	—
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	22.48	20.55	—

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Apr.	May	June	July	Day	Apr.	May	June	July
1	7⅝	7	—	6⅛	17	7½	6⅞	6⅛	—
2	7⅝	7	6⅝	6⅛	18	—	—	6	—
3	7⅝	7	6⅝	6⅛	19	—	6¾	6	—
4	7½	—	6⅝	6⅛	20	—	6⅞	6	—
5	7½	6⅞	6⅝	6⅛	21	—	6⅞	—	—
6	—	6⅞	6⅝	—	22	7⅝	6⅞	5⅞	—
7	7½	6⅞	—	—	23	7⅝	7	6⅛	—
8	7½	7	—	—	24	7¼	—	6⅛	—
9	7½	7⅛	—	—	25	7⅛	7	6⅛	—
10	7½	7⅛	6⅛	—	26	—	6⅞	6⅛	—
11	7½	—	6⅛	—	27	—	6⅞	6¼	—
12	7½	7	6¼	—	28	7	6⅞	—	—
13	—	7	6¼	—	29	7	6⅞	6¼	—
14	7½	7	6⅛	—	30	7	6¾	—	—
15	7½	6⅞	—	—	31	—			
16	7½	6⅞	6⅛	—					

Average Monthly Price Per Pound

Month	1928 Pence	1929 Pence	1930 Pence	Month	1928 Pence	1929 Pence	1930 Pence
Jan.	19.310	9.942	7.471	Aug.	9.300	10.505	—
Feb.	15.713	11.875	7.948	Sept.	8.530	10.160	—
Mar.	12.736	12.135	7.595	Oct.	8.807	9.620	—
Apr.	8.864	10.490	7.391	Nov.	8.596	8.442	—
May	8.845	10.717	6.926	Dec.	8.576	7.958	—
June	9.293	10.580	6.195	Average for Year	10.656	10.291	—
July	9.312	11.065	—				

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	June	July	Day of Month	June	July	Day of Month	June	July
1	—	13.65	11	15.10	—	21	13.70	—
2	16.15	13.60	12	14.80	—	22	—	—
3	16.00	13.60	13	14.50	—	23	13.50	—
4	15.90	—	14	13.95	—	24	13.05	—
5	16.00	—	15	—	—	25	13.45	—
6	15.85	—	16	13.45	—	26	13.80	—
7	15.70	—	17	13.55	—	27	13.60	—
8	—	—	18	13.70	—	28	13.70	—
9	15.70	—	19	13.95	—	29	—	—
10	15.25	—	20	14.05	—	30	13.55	—
						31	—	—

Average Monthly Price Per Pound

Month	1928 Cents	1929 Cents	1930 Cents	Month	1928 Cents	1929 Cents	1930 Cents
Jan.	19.12	20.22	17.21	Aug.	19.28	18.52	—
Feb.	18.40	20.21	15.62	Sept.	18.67	18.83	—
Mar.	19.38	20.19	15.13	Oct.	19.62	18 46	—
Apr.	20.63	20.29	16.39	Nov.	19.84	17.53	—
May	21.58	19.41	16.43	Dec.	20.22	17.28	—
June	21.50	18.74	14.48	Average for Year	19.97	19.03	—
July	21.36	18.62	—				

World Stocks of Crude Rubber

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND 1928	ON HAND 1929	ON HAND 1930	AFLOAT 1928	AFLOAT 1929	AFLOAT 1930	ON HAND AND AFLOAT 1928	ON HAND AND AFLOAT 1929	ON HAND AND AFLOAT 1930
Jan.	110,244	76,342	126,068	46,441	93,330	65,483	156,685	169,672	191,551
Feb.	108,955	90,058	134,790	48,044	75,790	71,015	156,999	165,848	205,805
Mar.	114,061	100,536	141,843	43,378	76,648	63,646	157,439	177,184	205,489
Apr.	113,083	107,659	148,272	32,783	66,919	63,261	145,866	174,578	211,533
May	105,356	97,192	146,179	33,145	60,326	68,168	138,501	157,518	214,347
June	90,198	92,061		38,392	58,748		128,590	150,809	
July	83,242	92,535		42,943	52,793		126,185	145,328	
Aug.	68,994	90,769		54,904	48,434		123,898	139,203	
Sept.	68,851	84,362		52,692	58,954		121,543	143,316	
Oct.	66,421	83,483		45,646	61,140		112,067	149,623	
Nov.	61,956	92,219		75,502	62,268		137,458	154,487	
Dec.	66,166	118,609		92,037	67,009		158,203	185,618	

(Rubber Manufacturers' Association figures raised to 100%.)

STOCKS IN GREAT BRITAIN

Stocks in London

(No. of Tons in Wharves and Warehouses, including Latex)

At end of	1928	1929	1930	At end of	1928	1929	1930
Jan.	66,524	25,191	60,434	July	35,429	30,080	
Feb.	62,964	25,554	64,557	Aug.	32,084	35,605	
Mar.	58,272	28,214		Sept.	31,440	42,188	
Apr.	53,425	31,368		Oct.	24,207	47,803	
May	44,628	31,290		Nov.	17,775	52,454	
June	38,756	31,025		Dec.	19,815	54,304	

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1930					
January	56,616	58,990	59,607	59,984	
February	60,460	61,482	62,659	62,725	
March	64,383	66,418	66,885	68,404	69,233
April	71,477	72,333	73,252	74,084	
May	75,540	76,118	76,932	76,953	77,198
June	77,616	78,104	78,888	79,699	

Stocks in Liverpool

1930					
January	19,438	19,640	19,515	20,063	——
February	19,898	19,761	19,677	19,704	
March	20,693	20,727	20,849	21,187	21,198
April	22,008	22,676	22,663	23,546	
May	23,877	23,755	24,443	24,722	25,526
June	25,320	26,646	27,354	27,493	

STOCKS IN PENANG AND SINGAPORE

(Stocks held by Dealers—Quantities in Long Tons)

End of	1928	1929	1930	End of	1928	1929	1930
Jan.	25,868	29,617	39,727	July	18,663	33,859	——
Feb.	22,867	32,373	44,371	Aug.	18,971	30,834	——
Mar.	20,538	29,437	45,657	Sept.	14,898	32,138	——
Apr.	16,946	26,474	48,473	Oct.	12,149	33,770	——
May	17,437	30,764	44,715	Nov.	29,188	30,963	——
June	18,207	30,403	——	Dec.	32,895	35,548	——

STOCKS IN OTHER CENTRES

1930 End of	Malaya Mainland	Afloat for Europe[1]	Holland	Colombo	Para and Manaos
Jan.	44,740	28,440	2,134	5,400	3,668
Feb.	41,955	28,180	2,159	5,000	4,370
Mar.	39,206	27,510	2,220	4,759	4,578
Apr.	39,758	23,580	2,204	4,000	4,482
May	26,482	24,044			4,388
June					

(1) Reported by U. S. Department of Commerce.

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1922	16,297,735	0.0	1926	24,199,524	78.8
1923	23,140,620	0.6	1927	19,700,003	79.1
1924	21,863,311	19.7	1928	24,247,282	81.6
1925	26,001,664	66.8	1929	24,141,502	80.3
1929			1930		
July	1,896,666	78.2	January	1,601,326	84.0
August	1,570,099	79.4	February	1,653,421	78.9
September	2,110,003	80.7	March	2,061,999	79.1
October	1,647,350	76.4	April	2,339,834	81.1
November	596,989	64.7	May	2,010,067	84.3
December	879,259	79.0	June		

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928	1929
Production	40,932	45,259	51,633	60,845	61,237	64,439	77,944	73,308
Shipments	39,987	45,204	50,120	59,262	59,002	64,059	74,296	74,021
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264	13,624	12,627

Figures for Recent Months

	PRODUCTION 1928	PRODUCTION 1929	PRODUCTION 1930	SHIPMENTS 1928	SHIPMENTS 1929	SHIPMENTS 1930	INVENTORY 1928	INVENTORY 1929	INVENTORY 1930
Jan.	5,358	6,722	4,745	5,394	6,626	4,701	9,949	13,712	12,719
Feb.	6,363	6,912	4,859	5,031	5,282	4,474	11,721	15,495	13,238
Mar.	6,819	7,519	5,188	5,731	6,708	5,032	12,389	16,351	13,469
Apr.	6,178	7,884	6,024	5,812	7,294	5,429	12,717	16,929	13,948
May	6,759	8,145	——	6,457	7,184	——	13,024	17,849	——
June	6,692	7,304	——	7,117	7,254	——	12,162	17,957	——
July	6,498	6,475	——	7,895	7,855	——	11,157	15,830	——
Aug.	7,469	5,806	——	8,403	7,845	——	10,034	14,226	——
Sept.	6,802	4,758	——	7,145	5,998	——	9,765	12,875	——
Oct.	7,326	4,919	——	5,717	4,960	——	11,520	12,845	——
Nov.	6,075	3,603	——	4,998	3,558	——	12,579	12,935	——
Dec.	5,605	3,261	——	4,591	3,346	——	13,624	12,627	——

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928	1929
Production	50,850	60,116	70,706	82,614	76,618	70,823	80,180	73,417
Shipments	49,673	59,072	68,016	81,004	71,591	72,896	77,127	75,298
Inventory[2]	7,643	8,425	11,052	11,313	16,200	13,692	16,117	13,560

Figures for Recent Months

	PRODUCTION 1928	PRODUCTION 1929	PRODUCTION 1930	SHIPMENTS 1928	SHIPMENTS 1929	SHIPMENTS 1930	INVENTORY 1928	INVENTORY 1929	INVENTORY 1930
Jan.	5,441	6,517	4,914	6,072	7,242	5,181	12,982	15,386	13,551
Feb.	6,895	6,769	4,943	5,431	5,278	4,627	14,650	16,999	13,905
Mar.	6,231	7,466	5,271	5,731	6,737	5,042	15,573	17,750	14,057
Apr.	6,661	7,634	5,877	5,702	7,164	5,172	16,638	18,134	14,704
May	7,168	7,660	——	6,300	7,038	——	17,702	18,928	——
June	6,953	6,978	——	7,136	6,950	——	17,159	17,741	——
July	6,674	6,178	——	8,729	8,113	——	14,974	16,332	——
Aug.	8,343	5,846	——	9,350	8,183	——	13,931	14,157	——
Sept.	7,103	5,536	——	7,154	6,250	——	13,543	13,424	——
Oct.	6,929	5,310	——	5,662	5,001	——	15,285	13,656	——
Nov.	5,592	3,780	——	5,002	3,712	——	15,743	13,701	——
Dec.	5,184	3,716	——	4,858	3,631	——	16,117	13,660	——

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States Total	United States Passenger Cars	United States Trucks	Canada Total	Canada Passenger Cars	Canada Trucks	Grand Total
1923	4,020,255	3,631,728	388,527	146,438	129,228	17,210	4,166,693
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,092	164,483	40,609	4,503,891
1927	3,393,887	2,938,868	453,019	179,426	146,870	32,556	3,573,313
1928							
July	390,445	337,933	52,512	25,226	20,122	5,104	415,671
Aug.	458,429	400,689	57,740	31,245	24,274	6,971	489,674
Sept.	413,722	358,872	54,850	21,193	16,572	4,621	434,915
Oct.	397,096	339,976	57,120	18,536	13,016	5,520	415,632
Nov.	256,936	217,256	39,680	11,769	8,154	3,615	268,705
Dec.	233,135	205,144	27,991	9,425	6,734	2,691	242,560
TOTAL	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929							
Jan.	402,154	350,617	51,537	21,501	17,164	4,337	423,655
Feb.	466,084	407,589	58,495	31,287	25,584	5,703	497,371
March	584,733	513,266	69,559	40,621	32,833	7,788	625,354
April	620,656	538,679	81,977	41,901	34,392	7,509	662,557
May	603,969	516,055	86,596	31,559	25,129	6,430	635,528
June	545,252	453,956	91,296	21,492	16,511	4,981	566,744
July	500,331	427,213	73,118	17,461	13,600	3,861	517,792
Aug.	499,629	444,711	54,918	14,214	11,037	3,177	513,843
Sept.	415,332	365,651	49,681	13,817	10,710	3,107	429,149
Oct.	380,011	321,195	58,816	14,523	8,975	5,548	394,534
Nov.	217,570	170,928	46,642	9,424	7,137	2,287	226,994
Dec.	119,950	92,717	27,233	5,495	4,426	1,069	125,445
TOTAL	5,358,361	4,603,609	754,752	263,295	207,498	55,797	5,621,656
1930							
Jan.	273,089	235,099	37,990	10,388	8,856	1,532	283,477
Feb.	323,962	276,833	47,129	15,548	13,021	2,527	339,510
March	401,378	336,178	64,200	20,730	17,165	3,565	422,108
April	442,630	375,171	67,459	24,257	20,872	3,385	466,887
May	417,154	362,784	54,370	24,672	21,251	3,421	441,826
June							

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA							DUTCH EAST INDIES[1]							
	Gross Exports	Gross Imports	Exports Minus Imports	Ceylon[1]	India & Burma[2]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[4]	Amazon Valley	All Other[4]	World Total
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,528
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	658,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1928:															
Apr.	20,139	9,335	10,804	3,233	789	630	494	258	3,993	5,040	5,499	736	1,014	1,323	33,810
May	26,483	10,350	16,133	3,091	654	842	494	241	4,943	5,355	10,347	717	2,602	1,135	45,994
June	22,994	16,168	6,826	3,107	963	926	494	451	5,419	5,863	13,655	725	1,399	960	40,788
July	30,481	13,383	17,098	5,129	1,043	905	593	366	5,602	7,566	11,594	698	1,264	873	52,731
Aug.	35,674	15,114	20,560	5,720	398	1,227	593	544	5,668	7,438	11,893	712	1,732	450	56,936
Sept.	29,769	11,239	18,530	4,675	457	938	594	447	4,956	6,536	9,863	969	1,614	494	50,075
Oct.	24,476	12,603	11,873	3,999	864	949	564	457	5,295	7,474	10,124	513	1,399	732	44,243
Nov.	68,135	10,436	57,699	8,005	1,048	772	564	425	4,950	7,902	7,805	943	1,790	623	92,526
Dec.	66,763	11,122	55,641	7,848	1,113	744	565	294	5,120	8,792	10,896	948	2,220	588	94,769
1929:															
Jan.	52,546	13,415	39,131	8,301	1,664	873	600	461	5,640	8,067	11,076	850	2,134	642	79,439
Feb.	47,926	12,103	35,823	7,064	1,117	955	600	495	6,572	7,511	10,384	807	2,104	520	73,952
Mar.	49,448	14,553	34,895	6,583	1,413	758	601	499	5,515	6,620	10,629	658	2,332	786	71,389
Apr.	49,816	11,414	38,402	5,097	727	747	548	306	5,997	6,645	11,321	673	1,950	569	72,982
May	42,960	15,598	28,367	5,723	800	966	548	453	6,264	6,961	13,437	1,059	1,922	733	67,233
June	40,398	14,344	26,054	5,563	1,122	1,061	547	422	5,582	6,693	11,270	757	1,398	548	61,017
July	46,454	15,071	31,383	5,457	974	1,247	641	462	6,422	7,192	13,995	575	1,457	543	70,348
Aug.	50,441	15,469	34,972	6,079	685	993	641	431	4,644	7,298	10,782	1,032	1,563	499	69,619
Sept.	53,484	12,392	41,092	7,993	384	832	640	406	4,708	7,517	10,149	655	1,566	504	76,446
Oct.	47,937	12,516	35,421	8,381	812	1,047	671	485	4,697	8,295	10,512	893	1,606	445	73,265
Nov.	46,279	11,204	35,075	6,660	1,065	668	672	278	4,760	6,711	9,380	771	1,442	535	68,017
Dec.	46,147	15,018	31,129	8,683	900	930	672	320	5,189	8,279	11,102	966	1,674	443	70,287
1930:															
Jan.	52,535	11,773	40,762	7,741	1,560	791	600*	386	5,709	7,831	8,920	856	1,837	585	77,578*
Feb.	48,947	12,960	35,987	7,825	1,245	847	600*	469	6,900	7,191	11,414	944	1,797	480	75,699*
Mar.	47,320	13,236	34,084	6,269	1,129	976	600*	391	5,796	6,612	11,070	643	1,674	536	69,780*
Apr.	45,517	16,331	29,186	5,030	856	1,026	600*	366	4,802	6,326	12,582	433	1,201	472	62,880*
May	49,388	36,135	13,253	5,947		917	600*	350	6,352	6,661	11,916	753	1,383	450*	

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927 and 1,437 in 1928. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included— such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons in 1926, about ½ ton in 1927, and 1 ton in 1928. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, and 1,459 tons in 1928. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States[1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ee)	Australia (ed)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,685	5,584	6,895	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	342,378
1920	248,762	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	370,641
1921	179,678	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	3,807	1,778	589	567	395,888
1923	300,372	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	807	3,178	944	1,370	414,847
1925	381,815	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	516,493
1926	395,667	24,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	613,647
1927	398,483	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,499	6,482	636	4,224	2,055	2,672	627,789
1928	404,496	4,846	36,498	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	596,695
1929	526,709	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	892,739
1928:															
Mar.	36,893	3,179	1,902	3,521	2,989	1,694	763	231	918	816	95	351	497	298	54,247
April	35,663	—2,280	2,204	2,719	1,938	2,334	1,114	1,820	832	575	280	339	304	159	48,001
May	28,660	—5,322	3,297	2,944	2,180	2,288	1,090	3,893	655	746	209	485	220	213	41,558
June	25,143	—3,031	3,597	2,968	2,186	2,102	984	4,111	348	743	133	346	251	182	40,063
July	28,170	—1,374	3,518	3,387	2,692	2,026	1,598	724	591	895	395	294	175	334	43,475
Aug.	28,827	48	3,527	2,744	2,447	1,868	875	632	707	519	316	359	58	94	43,021
Sept.	36,800	4,199	3,524	3,553	2,812	1,837	1,278	20	603	597	345	398	277	235	56,457
Oct.	41,667	—934	3,728	4,386	2,943	3,711	1,049	98	766	696	141	567	250	318	59,846
Nov.	33,846	—3,141	3,278	3,694	2,799	2,150	1,340	689	837	544	31	557	252	282	46,988
Dec.	40,781	8,438	3,633	2,470	2,618	3,002	1,145	1,378	755	639	148	485	263	209	65,905
1929:															
Jan.	53,922	11,951	5,645	4,711	3,759	3,776	1,481	956	1,061	749	218	638	179	525	89,571
Feb.	61,331	5,179	5,001	4,613	2,906	2,727	1,259	684	1,131	627	113	226	115	356	86,270
Mar.	46,391	9,068	4,409	4,586	4,961	2,630	1,515	716	725	931	316	354	80	409	77,091
Apr.	52,447	8,295	4,854	5,351	3,177	2,308	1,407	703	1,518	750	144	956	40	445	82,395
May	48,350	5,112	3,152	3,682	2,937	2,314	1,417	996	1,437	854	201	468	37	277	71,234
June	38,676	4,787	6,814	3,948	3,075	1,593	1,624	695	2,215	672	687	507	24	420	65,737
July	40,914	4,993	4,839	3,559	3,205	2,388	2,023	1,056	2,918	1,039	253	519	30	465	68,201
Aug.	35,207	14,594	4,645	4,082	2,879	3,663	908	1,234	724	902	254	429	25	319	69,865
Sept.	32,171	17,010	3,889	4,691	1,908	3,511	1,224	1,235	853	672	253	361	91	477	68,346
Oct.	35,840	16,111	4,489	3,355	1,821	3,902	1,838	1,073	1,125	1,147	278	710	91	201	71,981
Nov.	40,972	13,141	3,082	3,776	2,709	3,221	1,275	1,226	1,453	361	253	595	62	313	72,439
Dec.	40 488	12,434	4,274	2,921	2,114	2,251	1,198	1,200	726	741	52	677	90	443	69,609
1930:															
Jan.	44,759	11,106	4,207	3,862	2,842	2,805	910	2,292	332	612	209	552	200*	577	75,265
Feb.	40,718	10,293	4,482	3,697	2,250	1,386	1,385	2,128	457	1,143	188	315	200*	239	68,881
Mar.	42,068	12,346	4,354	4,289	3,776	2,485	1,083	948	975	678	358	322	200*	263	74,145
Apr.	42,961	13,058	4,962	4,488	2,303	2,584	2,067	1,000*	673	1,431	158	461	200	255	76,601*
May	40,287	9,861		4,379			1,279								

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1]United States imports of guayule are not included in this compilation; such imports amounted to 4,305 tons in 1926; to 5,010 tons in 1927; to 3,076 in 1928; and to 1,231 tons in 1929. *Figure is provisional; final figure will be shown immediately it becomes available.

Domestic Production of Miscellaneous Rubber Goods

	Rubber Proofed Fabrics Yards	Rubber Heels Pairs	Rubber Soles Pairs	Mechanical Goods Shipments Dollars
1924	25,020,000	186,279,000	(1)	$48,615,000
1925	23,988,000	206,976,000	16,211,620(2)	64,277,000
1926	29,328,000	183,812,000	12,258,000	76,789,000
1927	37,272,000	201,814,000	27,160,000	68,625,000
1928	41,179,000	235,170,000	37,645,000	69,114,000
1929	50,731,000	232,126,000	34,499,000	74,770,000
1929:				
June	4,409,000	20,007,000	2,502,000	6,792,000
July	4,260,000	19,315,000	1,295,000	6,306,000
August	5,085,000	23,095,000	2,948,000	6,792,000
September	5,507,000	21,702,000	2,841,000	5,906,000
October	6,116,000	22,386,000	3,502,000	5,887,000
November	4,395,000	17,863,000	3,400,000	4,932,000
December	2,291,000	14,781,000	3,003,000	4,751,000
1930:				
January	3,281,000	15,470,000	3,496,000	5,169,000
February	3,441,000	14,172,000	2,338,000	5,376,000
March	3,570,000	15,439,000	2,582,000	5,981,000
April	4,029,000			

(1) Not available; (2) Last 9 months only.
Source: "Survey of Current of Business of the Department of Commerce."

United States Imports of Guayule Rubber and Related Gums

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Gutta Percha	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	780,690	727	987,038	8,332	2,213,964	2,900	1,068,698
1920	758	345,985	1,064	1,260,048	5,672	2,068,501	3,183	1,520,309
1921	58	26,945	814	1,077,859	1,745	851,893	985	333,564
1922	127	57,040	812	978,765	2,335	403,312	818	281,912
1923	1,155	542,227	700	896,524	4,565	853,308	912	375,167
1924	1,356	536,392	464	568,456	6,165	1,237,100	1,408	463,610
1925	3,781	1,893,448	517	574,750	6,749	1,642,531	1,603	629,284
1926	4,385	2,562,096	354	327,213	7,263	3,127,757	1,445	661,156
1927	5,018	2,674,957	582	447,246	7,785	2,446,657	1,494	728,172
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	1,597	777,128
1929	1,231	545,175	728	566,964	8,203	2,458,126	447	167,479
1929:								
July	260	86,175	49	46,440	572	180,065	14	5,807
Aug	190	80,443	58	47,769	575	171,733	—	—
Sept.	107	51,156	35	30,327	913	279,225	—	—
Oct.	200	79,968	58	43,756	636	181,421	—	—
Nov.	125	47,796	13	11,600	583	182,677	49	14,935
Dec.	100	41,328	25	19,955	550	156,939	51	12,695
1930:								
Jan.	150	55,272	28	28,549	509	141,284	—	—
Feb.	75	25,956	52	45,319	367	93,087	—	—
Mar.	148	50,007	16	12,498	522	128,844	—	—
Apr.	75	19,856	58	54,548	410	103,089	—	—
May	172	57,760	17	13,645	602	144,415	—	—

Reclaimed Rubber in the United States

(All Quantities in Long Tons—100% Basis)

Year	Production	Consumption Tons	Consumption % to Crude	Stocks*	Year	Production	Consumption Tons	Consumption % to Crude	Stocks*
1920	86,395	75,297	38.4	.....	1925	132,930	137,105	35.6	13,203
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,334	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....	1928	208,516	223,000	50.4	24,785
1924	80,079	76,072	22.4	.....	1929	218,954	226,589	48.4	27,464
1928:									
Jan.	14,862	20,140	58.5	21,941	July	17,278	19,070	51.0	17,305
Feb.	15,291	18,670	55.4	20,848	Aug.	19,049	17,890	41.7	15,881
Mar.	17,669	20,680	57.9	19,558	Sept.	18,693	17,795	44.6	17,991
Apr.	15,393	19,280	58.5	19,253	Oct.	17,182	18,420	45.1	17,026
May	15,945	20,215	54.1	18,187	Nov.	18,245	18,380	49.1	22,299
June	18,781	18,140	48.2	18,709	Dec.	17,728	14,320	45.9	24,785
1929:									
Jan.	18,685	21,068	49.1	24,394	July	18,387	20,236	48.7	19,679
Feb.	18,094	19,329	47.7	23,305	Aug.	19,787	18,230	47.6	22,309
Mar.	19,984	20,867	46.7	22,076	Sept.	18,660	17,071	49.2	24,984
Apr.	19,399	22,485	47.3	20,680	Oct.	18,865	18,744	53.8	25,117
May	20,385	23,176	47.1	19,479	Nov.	14,363	15,330	55.4	26,080
June	18,416	18,141	42.0	17,980	Dec.	13,429	11,531	49.0	27,464
1930:									
Jan.	15,010	17,454	47.6	24,241	July	.....	.....	.....	.....
Feb.	15,846	14,559	44.5	24,243	Aug.	.....	.....	.....	.....
Mar.	17,400	15,241	42.2	24,415	Sept.	.....	.....	.....	.....
Apr.	17,828	16,904	42.0	24,587	Oct.	.....	.....	.....	.....
May	17,812	17,052	42.7	23,356	Nov.	.....	.....	.....	.....
June	.....	.....	.....	.....	Dec.	.....	.....	.....	.....

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927, 9,577 tons in 1928, and 12,369 tons in 1929.

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1929	1930	MONTHS	1929	1930
January	22,602,000	25,731,000	July	36,860,000	
February	22,776,000	26,509,000	August	37,759,000	
March	28,495,000	31,029,000	September	34,193,000	
April	32,019,000	34,549,000	October	32,816,000	
May	34,117,000	36,497,000	November	31,502,000	
June	33,163,000		December	26,550,000	

REVIEW DESK

Books, New Publications, Catalogues, Etc.

INTERNATIONAL CONTROL OF RAW MATERIALS. By Benjamin Bruce Wallace and Lynn Ramsay Edminster. Published by the Brookings Institution, Washington, D. C. June, 1930. 494 pp. $3.50.

That the unequal distribution of raw materials among the nations of the world has given rise to some of the most difficult problems in economics and international relations is appreciated only too well by those in the rubber industry. Appropriately, therefore, the authors of this volume devote a 47-page chapter exclusively to the British export restrictions on rubber and include in a 20-page appendix reports of the committee, headed by the late Sir James Stevenson, which drafted the restriction act. Other restrictive efforts considered in full detail are the Chilean control of sodium nitrate, the Japanese camphor monopoly, the Franco-German potash combine, the Brazilian valorization and control of coffee, and the Canadian embargoes on pulpwood. Dr. Wallace and Mr. Edminster can not find that past restrictive measures have been satisfactory to all parties concerned, but it is doubtful whether their suggestion of handling the problem through a commercial division of the Permanent Court of International Justice would prove to be more practicable.

BARAK. Published by the Rubber Chemicals Section, E. I. du Pont de Nemours & Company, Inc., Wilmington, Del. 1930. 12 pp. For free distribution.

Barak is a new type of accelerator activator whose most distinctive property is that it prolongs the range of cure of compounds that contain it and tends to prevent reversion on overcures. This laboratory report contains formulas for compounds with this accelerator and physical tests of these compounds.

CATALOG No. 66. Published by the Adamson Machine Company, Akron, Ohio. 1930. 32 pp. For free distribution.

For nearly 35 years this manufacturer has been supplying equipment to the rubber industry. In this catalog are described its line of calenders, mills, mixers, refiners, washers, presses, tubing machines and other rubber factory machinery and laboratory equipment.

WHAT'S NEW IN ROYLE TUBING MACHINES? Published by John Royle & Sons, Straight and Essex Streets, Paterson, N. J. 1930. 4 pp. For free distribution.

Recent developments in tubing machines by this manufacturer are discussed in this circular, with illustrations of four typical items of such equipment.

DU PONT ABRADER AND WILLIAMS PLASTOMETER. Published by the Henry L. Scott Company, Providence, R. I. 1930. 24 pp. For free distribution.

Descriptions and directions for the operation of the Williams Plastometer (Du Pont Model) and the Du Pont Abrador (Williams Patent) are included in this pamphlet, together with the paper presented on the latter machine by Ira Williams before the Rubber Division of the American Chemical Society at Richmond, Va., on April 14, 1927.

INSTRUCTION FOR THE INSTALLATION AND CARE OF BROWN ELECTRIC FLOW METERS. Published by the Brown Instrument Company, Wayne and Roberts Avenues, Philadelphia, Pa. 1930. 40pp. For free distribution.

The flow meter is a precision instrument and should be treated as such. It is the purpose of this handbook to explain the mechanism of the various types of these flow manometers, indicators and recording instruments, to give instructions for their use and to offer practical suggestions for avoiding difficulties.

AMERICAN STANDARDS YEAR BOOK. Published by the American Standards Association, 29 West 39th Street, New York City. 1930. 104 pp. For free distribution.

The importance of standardization to industry is well known, and this annual sums up the projects to that end undertaken by the association. Of particular interest are the standard for cotton rubber-lined fire hose and the safety code that is proposed for rubber machinery.